CITY OF CAMBRIDGE

ANNUAL REPORT

OF THE

SCHOOL COMMITTEE

PREPARED BY THE

SUPERINTENDENT OF SCHOOLS

1893

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HARVARD PRINTING COMPANY
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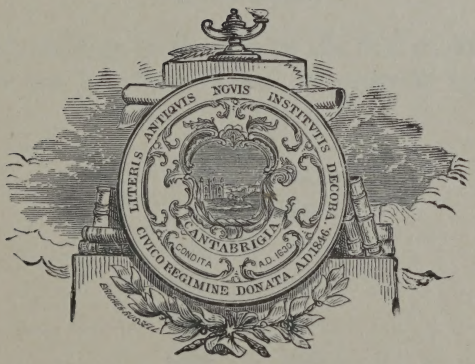


CAMBRIDGE
HARVARD PRINTING COMPANY
1894

REPORT

OF THE

SCHOOL COMMITTEE FOR 1893.

In compliance with Section 142 of the Rules and Regulations, the Superintendent herewith submits his nineteenth annual report for the year ending December 31, 1893.

Population of Cambridge.

1840	8,409	1870	39,634
1850	15,215	1875	47,838
1855	20,473	1880	52,699
1860	26,060	1885	59,658
1865	29,112	1890	70,028

Estimated population, 1893, 80,000.

School Census.

Number of children in the city on the first of May, five years old or more but less than fifteen, as reported by the Truant Officers.

1875	8,128	1885	10,957
1876	8,218	1886	11,131
1878	8,422	1887	11,216
1879	8,885	1888	11,727
1880	9,390	1889	11,750
1881	9,582	1890	11,971
1882	10,370	1891	12,160
1883	10,490	1892	12,451
1884	10,682	1893	12,644

Schools and Class-rooms.

Latin School	1	Class-rooms in use		8
English High School	1	" " "		13
Grammar Schools	11	" " "		128
Primary Schools	21	" " "		110
Kindergartens	7	" " "		8
Evening Drawing Schools	2	" " "		7
Evening High School	1	" " "		6
Evening Elementary Schools	3	" " "		12
Whole number of Day Schools				41
Number of class-rooms for Day Schools				267

High School and Grammar School Houses.

School Houses.	Number of Class-rooms.	Estimated Value.	Size of Lots, sq. ft.	Estimated Value.	Total Value.
Latin	8*	$40,000	37,828	$15,900	$55,900
English High	11†	220,000	74,366	18,000	238,000
Allston	12‡	30,000	15,193	4,600	34,600
Corlett	2	3,000	10,000	1,000	4,000
Harvard	16‡	45,000	20,494	12,000	57,000
Morse	14‡	73,000	25,650	7,000	80,000
Peabody	6	27,000	21,813	7,000	34,000
Putnam	13‡	60,000	11,900	8,300	68,300
Shepard	11	30,000	14,755	7,000	37,000
Thorndike	12	30,000	10,027	4,000	34,000
Washington	12‡	25,000	14,951	7,000	32,000
Webster	16‡	50,000	25,839	9,000	59,000
Wellington	13‡*a*	42,000	27,673	8,300	50,300
Total	146	$675,000	310,489	$109,100	$784,100

*Also a library, a physical laboratory, and an assembly hall.

†Also five recitation rooms, a library, a physical laboratory, a chemical laboratory, a lecture room, a drawing-room, and an assembly hall.

‡ Also an assembly hall.

‡ *a* On the same lot there is another schoolhouse containing four rooms used for primary classes.

Primary School Houses.

School Houses.	Number of Class-rooms.	Estimated Value.	Size of Lots, sq. ft.	Estimated Value.	Total Value.
Agassiz	7	$18,000	19,689	$6,000	$24,000
Boardman	8	12,000	10,018	4,000	16,000
Cushing	2	3,000	14,787	1,000	4,000
Dana	4	2,000	14,317	4,300	6,300
Dunster	4	4,000	10,000	2,000	6,000
Felton	4	6,000	15,090	4,500	10,500
Gannett	5	12,000	15,434	3,000	15,000
Gore	12	25,000	9,900	4,000	29,000
Holmes	4	6,000	11,182	4,500	10,500
Lassell	4	8,000	10,000	2,500	10,500
Lowell	4	7,000	12,033	2,500	9,500
Otis	8	12,000	8,270	4,000	16,000
Parker	6	17,600	12,329	7,000	24,600
Quincy	2	10,000	8,469	5,000	15,000
Reed	4	4,000	12,000	1,200	5,200
Riverside	4	5,000	11,192	3,000	8,000
Sargent	4	3,000	9,995	4,000	7,000
Stearns	4	3,000	10,050	5,000	8,000
Tarbell	4	8,000	19,500	4,000	12,000
Willard	12	25,000	20,079	5,000	30,000
Wyman	6	6,000	14,347	3,000	9,000
Primary Total	112	$196,600	268,681	$79,500	$276,100
Grammar "	127	415,000	198,295	75,200	490,200
High Schools "	19	260,000	112,194	33,900	293,900
Summary	258	$871,600	579,170	$188,600	$1,060,200

Number of teachers in the Day Schools.

[Special teachers are included in the total.]

December.	Latin School.	English High School.	Grammar Schools.	Primary Schools.	Kindergartens.	Total.	Normal Graduates.
1888	10	12	115	102	..	241	155
1889	10	14	118	100	7	251	142
1890	10	15	121	101	11	263	146
1891	10	16	126	104	11	272	161
1892	10	19	131	106	12	284	166
1893	11	19	138	108	13	297	171

Attendance at all the Day Schools.

Year.	Number of Pupils Registered.	Average Number Belonging.	Average Daily Attendance.	Per cent of Attendance.
1880	8,537	7,175	6,614	92.2
1885	10,213	8,650	7,915	91.5
1890	11,914	10,089	9,325	92.4
1891	12,468	10,520	9,659	91.8
1892	12,845	10,861	9,959	91.7
1893	13,107	11,045	10,074	91.2

Attendance at the Latin School.

Year.	Number of Pupils Registered.	Average Number Belonging.	Average Daily Attendance.	Per cent of Attendance.
1888	247	228	217	95.1
1889	239	217	207	95.5
1890	224	204	199	96.4
1891	231	213	204	95.7
1892	238	213	203	95.4
1893	269	251	236	94.1

Attendance at the English High School.

Year.	Number of Pupils Registered.	Average Number Belonging.	Average Daily Attendance.	Per cent of Attendance.
1888	343	304	290	95.3
1889	397	345	331	96.1
1890	473	409	396	96.7
1891	552	480	464	96.6
1892	624	529	511	96.5
1893	681	569	549	96.5

Attendance at the Grammar Schools.

Year.	Number of pupils Registered.	Average Number Belonging.	Average Daily Attendance.	Per cent of Attendance.
1888	5,421	4,760	4,427	93.0
1889	5,602	4,864	4,517	92.9
1890	5,668	4,891	4,557	93.2
1891	5,793	5,052	4,701	93.1
1892	5,891	5,175	4,803	92.8
1893	5,981	5,206	4,838	92.9

Attendance at the Primary Schools.

Year.	Number of Pupils Registered.	Average Number Belonging.	Average Daily Attendance.	Per cent of Attendance.
1888	5,485	4,465	4,031	90.3
1889	5,617	4,537	4,086	90.0
1890	5,321	4,403	4,011	91.1
1891	5,499	4,481	4,065	90.7
1892	5,6	4,650	4,203	90.4
1893	5,757	4,666	4,215	90.3

Attendance at the Kindergartens.

Year.	Number of Pupils Registered.	Average Number Belonging.	Average Daily Attendance.	Per cent of Attendance.
1890	228	183	163	89.6
1891	393	294	225	76.7
1892	395	294	239	81.2
1893	419	353	236	66.9

Number of pupils admitted to the Latin School.

Course, 5 years.

Year.	Boys.	Average Age.	Girls.	Average Age.
1887	49	14 yrs. 9 mos.	37	14 yrs. 6 mos.
1888	36	14 yrs. 7 mos.	24	15 yrs. 0 mos.
1889	37	14 yrs. 10 mos.	34	14 yrs. 7 mos.
1890	39	14 yrs. 6 mos.	22	14 yrs. 9 mos.
1891	32	14 yrs. 5 mos.	35	14 yrs. 3 mos.
1892	52	14 yrs. 7 mos.	32	14 yrs. 7 mos.
1893	63	14 yrs. 6 mos.	41	14 yrs. 1 mos.

Number of pupils graduated from the Latin School.

Course, 5 years.

Year.	Boys.	Average Age.	Girls.	Average Age.
1887	4	18 yrs. 0 mos.	7	18 yrs. 9 mos.
1888	13	18 yrs. 7 mos.	9	19 yrs. 0 mos.
1889	16	18 yrs. 11 mos.	11	19 yrs. 3 mos.
1890	10	18 yrs. 8 mos.	7	19 yrs. 2 mos.
1891	25	18 yrs. 6 mos.	16	18 yrs. 9 mos.
1892	8	17 yrs. 8 mos.	14	18 yrs. 7 mos.
1893	16	19 yrs. 3 mos.	7	19 yrs. 5 mos.

Number of pupils admitted to the English High School and the Manual Training School.

[The Manual Training School is connected with the English High School.]

Year.	English High. Course, 4 yrs.	Average Age.	Manual Training. Course, 3 years.	Average Age.
1888	147	15 yrs. 2 mos.	47	15 yrs. 2 mos.
1889	205	15 yrs. 3 mos.	52	15 yrs. 3 mos.
1890	181	15 yrs. 1 mo.	63	15 yrs. 3 mos.
1891	202	15 yrs. 1 mo.	58	15 yrs. 5 mos.
1892	230	15 yrs. 3 mos.	85	15 yrs. 3 mos.
1893	210	15 yrs. 3 mos.	73	15 yrs. 1 mo.

Number of pupils graduated from the English High School and the Manual Training School.

[The Manual Training School is connected with the English High School.]

Year.	English High. Course, 4 yrs.	Average Age.	Manual Training. Course, 3 years.	Average Age.
1888	41	18 yrs. 11 mos.	Course changed to 4 years in 1893.	In 1893, 6 of the 32 in 4 years' course.
1889	59	18 yrs. 7 mos.		
1890	37	18 yrs. 7 mos.		
1891	35	18 yrs. 4 mos.	13	17 yrs. 4 mos.
1892	52	18 yrs. 9 mos.	25	18 yrs. $\frac{1}{4}$ mo.
1893	63	18 yrs. 10 mos.	32	18 yrs. $\frac{3}{4}$ mo.

Number of pupils graduated from the Grammar and Primary Schools.

Year.	Grammar Schools. Course, 6 yrs.	Average Age.	Primary Schools. Course, 3 yrs.	Average Age.
1892	536	15 yrs. $\frac{4}{5}$ mo.	1146	9 yrs. 10 mos.
1893	487	14 yrs. 11 mos.	1147	9 yrs. 9 mos.

Length of time in completing the Course of Study.

Grammar Schools. Course, 6 years.

Year.	In 4 years.	In 5 years.	In 6 years.	In 7 years or more.
1892	10 per cent.	27 per cent.	45 per cent.	18 per cent.
1893	9 per cent.	29 per cent.	47 per cent.	15 per cent.

Primary Schools. Course, 3 years.

Year.	In 2 years.	In 2½ years.	In 3 years.	In 3½ years.	In 4 years.	In 4½ years or more.
1892	5 per cent.	.....	66 per cent.	.....	20 per cent.	9 per cent.
1893	6 per cent.	3 per cent.	56 per cent.	3 per cent.	20 per cent.	12 per cent.

Number of pupils in all the Day Schools at different periods of the year.

Year.	First day of the first week.	First day of the second week.	First week of October.	First week of June.
1891	9,580	10,461	11,180	10,863
1892	10,184	10,974	11,360	11,204
1893	10,692	11,354	11,628	11,342

Number of pupils in the Latin School, December, 1893.

Grade.	Boys.	Girls.	Total.	Per cent.
Fourteenth.....	18	16	34	.110
Thirteenth.....	27	19	46	.148
Twelfth.....	29	27	56	.180
Eleventh	40	29	69	.222
Tenth.....	66	40	106	.340
Total.....	180	131	311	

Number of pupils in the English High School, December, 1893.

Grade.	Boys.	Girls.	Total.	Per cent.
Thirteenth	21 (5)*	58	79	.121
Twelfth	48 (30)*	61	109	.166
Eleventh	91 (57)*	87	178	.271
Tenth	121 (80)*	169	290	.442
Total	281 (172)*	375	656	

Number of pupils in the Grammar Schools, December, 1893.

Grade.	Boys.	Girls.	Total.	Per cent.
Ninth	285	356	641	.118
Eighth	298	274	572	.104
Seventh	396	437	833	.151
Sixth	559	556	1,115	.202
Fifth	505	505	1,010	.183
Fourth	691	639	1,330	.242
Total	2,734	2,767	5,501	

Number of pupils in the Primary Schools, December, 1893.

Grade.	Boys.	Girls.	Total.	Per cent.
Third	681	683	1,364	.281
Second	766	712	1,478	.305
First	1,066	944	2,010	.414
Total	2,513	2,339	4,852	
Kindergartens	148	178	326	

*Manual Training School.

Number of pupils belonging to the Evening Drawing Schools with the average attendance.

1888.	1889.	1890.	1891.	1892.	1893.
216	228	166	188	219	242
101	120	106	110	127	142

Number of pupils belonging to the Evening Schools with the average attendance.

1888.	1889.	1890.	1891.	1892.	1893.
356	425	739	1,020	1,013	1,085
149	181	298	362	329	419

Number of pupils in the Private Schools in Cambridge including those in the Parochial Schools.

1888.	1889.	1890.	1891.	1892.	1893.
1,785	2,037	2,050	2,127	2,235	2,376

Cost of instruction in the Evening Schools.

Year.	Elementary.	High.	Drawing.	Total.
1888	$1,058 00	Opened Jan. 3, 1889.	$1,350 00	$2,408 00
1889	1,247 00	$855 00	1,230 00	3,332 00
1890	1,513 00	1,260 00	546 00	3,319 00
1891	1,851 50	1,191 25	867 00	3,909 75
1892	1,827 50	1,226 25	1,157 00	4,210 75
1893	2,124 50	1,363 00	1,531 00	5,018 50

Cost of instruction in the Day Schools.

[Salaries of teachers, superintendent, agent, and truant officers.]

Year.	Number of Teachers January 1.	Average Number of Pupils.	Whole Cost.	Cost per Pupil.
1876	176	7,066	$164,818 00	$23 32
1878	173	7,028	136,491 20	19 42
1880	182	7,175	130,371 75	18 17
1882	200	7,898	137,328 55	17 38
1883	212	8,194	144,457 60	17 63
1884	216	8,414	152,290 62	18 09
1885	224	8,650	158,640 13	18 33
1886	233	9,218	165,277 42	17 92
1887	237	9,429	172,135 06	18 25
1888	241	9,756	175,773 80	18 02
1889	251	9,962	180,816 26	18 15
1890	263	10,089	190,558 21	18 89
1891	272	10,520	196,938 70	18 72
1892	284	10,861	207,144 22	19 07
1893	297	11,045	215,593 12	19 52

Cost of the Day Schools.

[The expenditures for new schoolhouses are not included.]

Year.	Number of Teachers January 1.	Average Number of Pupils.	Whole Cost.	Cost per Pupil.
1876	176	7,066	$200,894 09	$28 43
1878	173	7,028	162,437 77	23 11
1880	182	7,175	153,967 56	21 45
1882	200	7,898	166,230 52	21 04
1883	212	8,194	177,149 93	21 62
1884	216	8,414	203,234 56	24 15
1885	224	8,650	206,806 09	23 90
1886	233	9,218	207,536 46	22 51
1887	237	9,429	222,679 19	23 61
1888	241	9,756	225,408 57	23 10
1889	251	9,962	229,421 31	23 03
1890	263	10,089	241,980 84	23 98
1891	272	10,520	249,491 67	23 71
1892	284	10,861	266,651 02	24 55
1893	297	11,045	274,053 82	24 81

Summary of the school census, as taken by the Truant Officers, May, 1893.

[The Statutes make it the duty of the School Committee to ascertain annually the names and ages of all persons between the ages of five and fifteen years, belonging in their respective towns and cities on the first day of May.]

Number of children in the city five years old or more, but less than fifteen	12,644
Number in public schools five years old or more, but less than fifteen	10,184
Number in public schools fifteen years old or more, as shown by the school register	1,179
Number in private schools five years old or more, but less than fifteen	1,594
Number not attending school five years old or more, but less than eight	549
Number not attending school eight years old or more, but less than fourteen	136
Number not attending school fourteen years old or more, but less than fifteen	181
Whole number not attending school five years old or more, but less than fifteen	866
Number in the city five years old or more, but less than six	1,168
Number in the city eight years old or more, but less than fourteen	7,717

Finances.

[For the financial year ending Dec. 1, 1893.]

Cost of instruction in day schools	$215,593 12
Cost of instruction in evening schools	5,018 50
Cost of care and repairs of schoolhouses (day schools)	41,054 11
Cost of care of schoolhouses (evening schools)	2,200 00
Cost of text-books and supplies	15,767 10
Incidental expenses	1,639 49
Expended on Parker schoolhouse (new)	12,967 35
Expended on Latin schoolhouse	1,500 00
Expended on Wellington schoolhouse	11,947 25
Expended on Putnam schoolhouse	670 00
Expended for sanitary arrangements	3,549 14
Expended for Wellington schoolhouse (furniture)	2,000 00
Expended for Manual Training school (furniture)	1,495 45
Expended for Parker schoolhouse (furniture)	797 22
Expended for English High schoolhouse (furniture)	496 50
Total expenditures for all school purposes	$316,695 23
Deducting receipts from the Hopkins Fund ($753.14) and for tuition of non-resident pupils ($677.50), actual cost of the schools to the city	$315,264 59
Assessed value of real and personal estate, May, 1893	76,293,989 00
Ratio of expenses for school purposes to the valuation of 1893	.0041

Statistics taken from the fifty-seventh annual report of the Secretary of the State Board of Education.

Number of cities and towns: cities, 30; towns, 322	352
Number of public schools	7,510
Number of pupils of all ages in the public schools during the year	391,745
Number of persons over fifteen years of age attending the public schools	35,395
Per cent of attendance based upon the average membership	90
Number of persons employed as teachers in the public schools during the year: men, 989; women, 10,244; total	11,233
Number of teachers who have graduated from normal schools	3,473
Average number of months the public schools have been kept for the entire year	8.13
Number of high schools	247
Number of teachers in high schools	961
Number of pupils in high schools	28,582
Amount expended upon the public schools, exclusive of the expense of school buildings	$7,388,605 29
Cost of new schoolhouses, permanent improvements, and ordinary repairs	2,275,302 20
Entire expenditure for public school purposes	$9,663,907 49

Special Institutions.

The following are the statistics of the attendance and expenses of the Massachusetts pupils in the several schools for the deaf, the blind, and the feeble-minded.

AMERICAN ASYLUM AT HARTFORD, CONN.

Number of Massachusetts beneficiaries, 1892–93	66
Paid for these pupils	$10,805 05

CLARK INSTITUTION, NORTHAMPTON.

Number of Massachusetts beneficiaries, 1892–93	99
Paid for these pupils	$17,219 38

HORACE MANN SCHOOL, BOSTON.

Number of Massachusetts beneficiaries, 1892–3	108
Paid for these pupils	$11,441 00

PERKINS INSTITUTION FOR THE BLIND.

Number of Massachusetts beneficiaries, 1892–3	114
Annual appropriation from the state	$30,000 00

SCHOOL FOR THE FEEBLE-MINDED, WALTHAM.

Number of Massachusetts beneficiaries, 1892–3	174
Annual appropriation from the state	$25,000 00

TABULAR VIEW.

JANUARY 1, 1894.

Prepared by the Secretary of the School Committee.

Names of Schools.	Teachers.	Salaries.	No. of Pupils Jan. 1, 1894.
Latin	William F. Bradbury	$3,000	311
	Theodore P. Adams	2,000	
	Charles W. Parmenter	1,800	
	Helen M. Albee	950	
	Constance Alexander	600	
	Charlotte C. Barrell	950	
	Caroline Drew	950	
	Mary C. Hardy	950	
	Margarette M. Leighton	950	
	Emma M. Sawyer	950	
	Jennie S. Spring	950	
	Annie S. Dodge*	200	
English High	Ray Greene Huling	3,000	656
	Edwin L. Sargent	2,000	
	Charles F. Warner	2,000	
	Joseph A. Coolidge	1,000	
	Clara A. Armes	950	
	Caroline Close	950	
	Bertha L. Cogswell	400	
	Grace L. Deering	1,050	
	Myra I. Ellis	1,000	
	Maud A. Lawson	800	
	Henrietta E. McIntire	700	
	Mary Moulton	950	
	Louisa P. Parker	1,000	
	Lillian C. Rogers	750	
	Caroline A. Sawyer	950	
	Emma A. Scudder	950	
	Martha R. Smith	950	
	Maria E. Spare	950	
	Delia M. Stickney	1,050	
	Anna M. Warren	700	
	Martha L. Babbitt*	500	
Allston	Benjamin W. Roberts	2,000	553
	Sara A. Bailey	700	
	Susan M. Adams	620	
	Mary Blair	620	
	Mary M. Brigham	620	
	S. Alice Fell	620	
	Susan L. Keniston	620	
	Evelyn B. Kenny	620	
	Ada M. Litchfield	520	
	S. Agnes Mulloney	620	
	Emily R. Pitkin	620	
	Elizabeth M. Ricker	620	

*Secretary and Librarian.

Tabular View — *Continued.*

Names of Schools.	Teachers.	Salaries.	No. of Pupils Jan. 1, 1894.
Allston	Ida G. Smith	$620	
	Caroline M. Williams	620	
Harvard	James S. Barrell	2,000	698
	Arthur A. Lincoln	1,200	
	Ada H. Wellington	700	
	Margaret B. Wellington	700	
	Addie L. Bartlett	620	
	Elizabeth L. Buckley	620	
	Sarah H. Conant	620	
	Mary F. Emerson	620	
	Frances Fabyan	620	
	Alice V. Flather	520	
	Estella J. French	620	
	Eliza S. Getchell	620	
	Mary W. Leymunion	620	
	Adeline M. Murphy	620	
	Louise C. Patterson	570	
	Annie M. Street	620	
	Emma F. West	520	
	Hortense O. Young	620	
Morse { Grammar	Mary A. Townsend	1,800	{ 395
Morse { Primary			{ 159
	Mary E. Towle	700	
	Elizabeth J. Baldwin	620	
	Mabel L. Chamberlain	570	
	Stella L. Cotton	470	
	Marie B. Daniel	520	
	Annie M. Dow	620	
	Leila F. Drake	570	
	Mary E. Leavitt	620	
	Alice E. May	520	
	Emily Richardson	620	
	Marcia E. Ridlon	620	
	Mary E. Sawyer	620	
	Lucy M. Soulée	620	
	Gertrude D. Sprague	520	
Peabody	Frederick S. Cutter	1,800	299
	Addie F. Cleary	700	
	Susan Allison	620	
	Anna F. Bellows	620	
	Mabel A. Clark	470	
	Charlotte A. Ewell	620	
	Florence E. Frost	620	
Putnam	Thomas W. Davis	2,000	673
	Charles C. Price	1,000	
	Eliza M. Hussey	700	
	Ella R. Avery	620	
	Annetta Bruce	620	
	Mary A. Carmichael	620	
	Lydia B. Collier	620	
	Anna L. P. Collins	570	
	Sarah M. Grieves	620	
	Annie B. Josselyn	620	
	Augusta G. Mirick	620	

Tabular View — *Continued.*

Names of Schools.	Teachers.	Salaries.	No. of Pupils Jan. 1, 1894.
Putnam	Eliza S. Paddack	$620	673
	Anna M. Poole	570	
	Henriette E. de Rochemont	520	
	Mary M. Sullivan	620	
	Annie A. Trelegan	570	
	Myra D. Webster	400	
Shepard	Edward O. Grover	2,000	606
	Nellie A. Hutchins	700	
	Mary C. Adams	570	
	Harriet V. Dever	620	
	Emma A. Faulkner	620	
	Emily F. Fessenden	620	
	Harriet Foster	620	
	Louise H. Griswold	620	
	Ella F. Horne	520	
	Ellen J. Hunt	620	
	A. Estelle Ingraham	620	
	Flora C. Ingraham	620	
	Melissa M. Lloyd	620	
	Evelyn J. Locke	620	
Thorndike	Ruel H. Fletcher	2,000	495
	Harriet A. Townsend	700	
	Grace W. Fletcher	620	
	Emma A. Hopkins	620	
	Abby A. K. Howard	620	
	Elizabeth G. Hutchison	620	
	Martha A. Martin	620	
	Mary E. Nason	620	
	S. Louise Regal	620	
	Alice C. Taggart	620	
	Abby S. Taylor	620	
	Laura A. Westcott	620	
	Lydia A. Whitcher	620	
Washington	John W. Freese	2,000	488
	M. Florence McGlashan	700	
	Eldora J. Clark	620	
	Lucy A. Downing	620	
	Mary L. Ells	620	
	Mary E. Kent	400	
	Ellen A. Kidder	570	
	Winifred L. Kinsley	620	
	Emily M. Marston	620	
	Emma Penney	400	
	Margaret J. Penney	620	
	Hattie Shepherd	620	
	Mary E. Stiles	620	
	Abby M. Webb	620	
Webster	John D. Billings	2,000	667
	Melzar H. Jackson	1,100	
	Alice C. Phinney	700	
	Martha N. Hanson	700	
	Ada A. Billings	620	
	Flora E. Billings	470	
	Ella E. Buttrick	620	
	Charlotte M. Chase	620	

Tabular View — *Continued.*

Names of Schools.	Teachers.	Salaries.	No. of Pupils Jan. 1, 1894.
Webster	Susan I. Downs	$620	
	Josephine Hills	620	
	Helen M. Joyce	620	
	Edith M. Keith	620	
	M. Josephine Lamprey	620	
	Anna S. Lamson	620	
	Minnie V. Reid	620	
	Harriette E. Shepard	570	
	Ellen F. Watson	620	
Corlett	Fannie P. Browning	630	67
	Mary L. Gamwell	620	
Agassiz { Grammar / Primary	Maria L. Baldwin	800	{ 112 / 198
	Mary G. Carpenter	620	
	Amy Greaves	470	
	Jennie Lyle	620	
	Minnie A. Noyes	620	
	Mary A. Parsons	520	
	Jennie L. Upham	400	
Boardman	Mary A. Lewis	660	365
	Florence H. Barrett	570	
	Christine R. Denyven	620	
	Alice Gregg	620	
	Nellie E. Hastings	620	
	Elizabeth J. Karcher	620	
	C. Florence Smith	620	
	Sarah E. Stewart	620	
Cushing	Isadore I. Foster	630	60
	Fannie G. Flanders	400	
Dana	Maria F. Williams	640	152
	Emily J. Allen	620	
	Abby A. Lewis	620	
	Georgia E. Martin	520	
Dunster	Susan E. Wyeth	645	159
	Mary E. Colby	620	
	Mary A. Doran	400	
	Isabel Foster	620	
Felton	Florence A. Rogers	640	161
	S. Emma Davis	520	
	Helen E. Hazard	400	
	Carrie H. Smith	620	
Gannett	Sarah J. A. Davis	640	173
	Annie M. Billings	520	
	Anna M. Jones	620	
	Mary A. Rady	620	
Gore	Frances E. Pendexter	680	550
	Anna E. Callahan	620	
	Addie H. Dale	570	
	Maude A. Deehan	520	
	Elizabeth B. Gahm	620	
	Katherine L. McElory	620	
	Mary C. McNally	620	
	Mary E. Mulloney	620	
	Anastasia Peters	470	

Tabular View. — *Continued.*

Name of Schools.	Teachers.	Salaries.	No. of Pupils Jan. 1, 1894.
Gore	Emma J. Ross	$620	
	Margaret Sullivan	400	
	Jane E. Whorisky	470	
Holmes	Marianne M. Webb	630	93
	Ellen M. Cyr	620	
Lassell	Ellen F. Ball	640	190
	Rose V. Collier	620	
	Cora A. Reycroft	620	
	Frances E. Whoriskey	620	
Lowell	Lucy E. Cyr	640	133
	Malvina E. Joslin	570	
	Agnes J. McElroy	520	
Otis	Ellen N. Leighton	660	344
	Frances Allen	620	
	Bridget T. Boyle	400	
	Martha H. Butler	620	
	Josephine M. Doherty	620	
	Luella M. Marsh	620	
	Ellen C. Walsh	620	
	Kate F. Wellington	620	
Parker	Emily C. Dallinger	635	87
	Mary M. Bucknam	620	
Quincy	Charlotte E. Jewell	630	90
	Lucy C. Wyeth	620	
Reed	Margaret Kidd	640	200
	Margaret T. Burke	620	
	Harriet N. Keyes	620	
	Julia A. Robinson	620	
Riverside	Elizabeth A. Tower	640	148
	Amanda M. Alger	620	
	Mary A. Burke	620	
Sargent	Mary A. Brown	640	169
	Christina D. Barbey	620	
	Fanny C. Hartwell	620	
	Ella M. Leaver	620	
Stearns	Fannie E. Higgins	640	191
	Maria J. Bacon	620	
	Ellen A. Cheney	620	
	Eva A. Taylor	620	
Tarbell	Emma J. Young	640	169
	Florence J. Alley	470	
	Ellen F. McCarthy	620	
	Carrie P. Pierce	570	
Willard	Amelia Wright	680	455
	Sally N. Chamberlain	620	
	M. Elizabeth Evans	620	
	Ella F. Gulliver	620	
	Julia S. Gushee	620	
	Mary E. G. Harrington	620	
	Louise W. Harris	620	
	Katherine M. Lowell	620	
	Emma C. Otis	620	
	Eliza D. Watson	620	
	Grace R. Woodward	620	
	Laura Wright	620	

Tabular View. — *Continued.*

Names of Schools.	Teachers.	Salaries.	No. of Pupils Jan. 1, 1894.
Wyman	Fannie E. M. Dennis	$650	302
	Addie M. Bettinson	620	
	M. Carrie Dickman	620	
	Georgianna B. Dutcher	620	
	Geneveive S. Flint	470	
	Mary M. Gilman	620	
Wellington { Grammar / Primary	Herbert H. Bates	2,200	448 / 304
	Susan G. Lombard	800	
	Eusebia A. Minard	800	
	Mary I. Vinton	800	
	Carrie H. Stevens	700	
	Emma M. Taylor	620	
	Elizabeth M. Nash	400	
	Training Class	4,400	
Kindergartens. Boardman	Mabel S. Eddy	620	41
	Margaret G. Mulloney	520	
Dunster	Clara A. Hall	520	44
	Mabel L. Sanderson	400	
Gannett	Gertrude M. Gove	520	25
Gore	Selma E. Berthold	620	56
	Sarah S. Wells	400	
Lowell	Melinda Gates	620	40
	Frances L. Plimpton	400	59
Moore Street	Harriette E. Ryan	620	
	Nellie A. Watson	400	
Riverside	Helen I. Hutchison	620	61
	Mabel F. Adams	400	
Teacher of Botany	Sarah E. Brassill	550	
Teacher of Gymnastics	Clara E. Sheppard	500	
Teachers of Sewing	Agnes Gordon	600	
	Alice H. Nay	600	
	Sarah J. Stanton	200	
Director of Music	Frederick E. Chapman	1800	
Director of Drawing	James M. Stone	1700	
Assistant in Drawing	Lucia N. Jennison	800	
Truant Officers	John Carmichael	700	
	Moses M. Child	900	
	Jon Collier	900	
	Francis M. Mason	900	

Superintendent — Francis Cogswell	$3,000
Special Primary Teacher — Lelia A. Mirick	1,000
Agent — Sanford B. Hubbard	1,800
Clerk — Althea B. Frost	600

The Wellington School is a training school, composed of grammar and primary pupils taught by young ladies, graduates of normal schools and candidates for the position of teacher, under the direction and with the assistance of the master of the school and his assistants.

Temporary assistants and members of the training class are counted as seven teachers, the sum of their salaries being about equal to the amount paid to that number of regular teachers.

Summary.

Number of pupils in Latin School	311
Number of pupils in English High School	656
Number of pupils in Grammar Schools	5,501
Number of pupils in Primary Schools	4,852
Number of pupils in Kindergartens	326
Total	11,646
Number of pupils belonging to the Public Schools, Jan. 1, 1893	11,511
Increase	135
Average annual increase of pupils, from 1860 to 1880 (inclusive)	219
Increase of pupils, 1882	448
Increase of pupils, 1883	280
Increase of pupils, 1884	165
Increase of pupils, 1885	589
Increase of pupils, 1886	267
Increase of pupils, 1887	371
Increase of pupils, 1888	173
Increase of pupils, 1889	249
Increase of pupils, 1890	368
Increase of pupils, 1891	222
Increase of pupils, 1892	210
Increase of pupils, 1893	135
Number of schools	41
Number of schoolrooms	267
Number of teachers	297

Cost of Instruction.

Latin School	$13,425 66	For each pupil	$43 17
English High School	22,095 00	" " "	33 68
Training School	9,360 00	" " "	12 45
Grammar Schools	89,362 50	" " "	17 68
Primary Schools	60,411 45	" " "	13 29
Kindergartens	6,475 10	" " "	19 86
Teachers of Sewing	1,356 75		
Director of Music	1,730 00		
Director of Drawing	1,700 00		
Teacher of Gymnastics	75 00		
Superintendent	3,000 00		
Agent	1,730 00		
Clerk	530 00		
Special Teacher in Primary Schools	1,000 00		
Truant Officers	3,341 66		
	$215,593 12	For each pupil	18 51
Cost of instruction in Evening High School			$1,363 00
Cost of instruction in Evening Elementary Schools			2,124 50
Cost of instruction in Evening Drawing Schools			*1,531 00
			$5,018 50

* The director of drawing is principal of these schools. No part of his salary is included in this amount.

Text Books and Supplies.

At the meeting of the Board in December, the committee on supplies submitted a detailed report of the expenditures of that committee for the year.

This report was accepted, and it was voted that it be incorporated in the annual report of the school committee. The report is as follows : —

"In accordance with section twenty-nine of the rules of the school board, the Committee on Supplies submit the following report of their doings for the school year ending July 1, 1893, being the ninth annual report of this committee to the Board."

Stock on hand July 1, 1892		$2,355 30
Purchases and expenditures to July 1, 1893		13,357 25
Total		$15,712 55
Delivered to the overseers of the poor	$12 21	
Sold for cash to pupils	105 30	
Delivered to schools and officers	12,934 98	
		13,052 49
Stock on hand July 1, 1893		$2,660 06

The purchases and expenditures have been:

For text-books	$5,145 61
Desk and reference books	428 76
Drawing and writing books	1,030 30
Apparatus and furnishings	1,224 40
Miscellaneous supplies	4,447 82
Printing ($563.94) ; expressage ($263.70)	827 64
Diplomas ($143.24) ; repairing books ($95.48)	238 72
Tuning pianos	14 00
	$13,357 25

Deducting from the value of books and supplies delivered to schools and officers, as above		$12,934 98
The sales in the schools	$121 26	
The damages collected	35 29	
And profit on sales from the office	10 21	
		166 76

We have, net cost of all schools and officers $12,768 22

or an average cost per pupil of $1.109, against $1.149, for the year 1892 ; $1.248 for the year 1891; $1.334, for the year 1890; $.960, for the year 1889 ; $1.068 for the year 1888 ; $1.051, for the year 1887 ; $1.17, for the year 1886 ; and $1.88, for the year 1885. The average cost per pupil per annum for nine years has been $1.219.

The cost of each grade of schools for text-books and supplies is as follows:—

	Net Expense.	Average per Pupil.				
		1893.	1892.	1891.	1890.	1889.
High Schools	$3,472 91	$3.969	$3.826	$3.855	$5.362	$4.054
Grammar Schools	5,075 41	1.106	.969	1.231	1,618	1.071
Mixed Schools	1,469 13	1.005	2,398	1.203	.985	.746
Primary Schools	966 21	.226	.140	.503	.286	.276
Kindergartens	156 12	.497	.316	.648	.....	.....
Evening Schools	493 64	.....	.....	.....	.....	.....
Special Teachers	245 07	.....	.....	.....	.....	.....
Miscellaneous expenses (not chargeable to any grade).	899 94	.....	.....	.....	.....	.....
	$12,778 43	.....	.....	.....	.....	.....
Less profit on sales	10 21					
	$12,768 22	$1.109	$1.149	$1.248	$1.334	$.960

The changes that may be noticed in the foregoing tables may be partly accounted for as follows:

The English high school was furnished with a large amount of chemical and physical apparatus last year which is an unusual expense; also the Morse school was completely fitted out last year, hence the great decrease in the cost of the mixed schools this year. The amount expended for supplies in the primary schools is larger because of the more extended use of paper and pencils for writing. An apparent increase in the cost per pupil in the kindergartens is due to the establishment of a new kindergarten in the Gannett schoolhouse; deducting this, the cost per pupil is less than last year. The increase in the item for printing, $295.89, is caused by printing the reports of two special committees and the courses of study in both music and drawing. The amount of damages collected, $35.29, less by $12.83 than last year, shows that the pupils are becoming more careful in using the property of the city, since the damages are assessed with the same strictness every year.

The total shows a decrease in the cost per pupil, charging the

entire net expense to the pupils of the day schools and kindergartens only. The average cost per pupil for the nine years, $1.21,9, would seem to be as low as can be expected, since additional text-books, especially in reading, are being introduced in accordance with the most progressive ideas, and this, of course, tends to keep up the average.

The estimate for the current financial year, on this basis, there being, December 1, 11,646 pupils in the day schools and kindergartens, would be $14,200. During the financial year just ended $15,767.10 was expended by this committee; with the closest economy they think that $14,000 will be sufficient for the regular supply of text-books and other supplies for the schools and recommend the appropriation of that sum.

Remarks on the Statistics.

The increase over the last school year in the number of pupils registered is 262; in the average number belonging, 184; in the average daily attendance, 115. In the per cent of attendance there has been a decrease of five-tenths of one per cent. The number belonging to the schools in December, 1892, was 11,511; in December, 1893, 11,646; an increase of 135. The entire cost of the day schools, excluding the expenditures for new schoolhouses and new furniture, exceeds that of last year by $7,402.80, and the cost per pupil by 26 cents. In the entire cost of instruction the increase is $8,448.90; an increase in the cost per pupil of 45 cents. While Cambridge expends a large amount for her schools, there are *two hundred and twenty-two* towns and cities in the state which make a larger expenditure in proportion to their wealth. In a list of the thirty cities, arranged numerically according to the percentage of their taxable property appropriated to the support of public schools for the year 1892–1893, Cambridge is the *sixteenth*, and compared with the fifty-four towns and cities of our county, Cambridge is the *thirty-second*. In a list of the towns and cities of the state, arranged numerically according to the sum appropriated for each child between five and fifteen years of age, Cambridge is the *thirty-fourth*.

These statistics relating to the schools of the state are taken from the fifty-seventh annual report of the Secretary of the Board of Education.

THE YEAR'S WORK.

The report for 1892 contained a somewhat extended account of the classification and growth of the schools during the previous fifty years. It has been thought advisable to give in this report only a brief statement of the work of the schools during the past year, and of the changes that have taken place. The following are the more important facts, taken mainly from the reports of the several committees made to the school board in December.

Latin School. There has been a gain in the attendance at this school during the past year of nearly twenty per cent. The present number of pupils is three hundred eleven, and the number of teachers is eleven. In September, on the recommendation of the head master, a teacher was appointed to give instruction in English composition, that this subject might have a more important place in the work of the school. Additions to the library have been made of books of reference and other books in value to the amount of nearly six hundred dollars, and about three hundred dollars has been expended for apparatus for the physical laboratory.

English High School. This school was organized as a separate school in 1886. Mr. Frank A. Hill was elected head master. In June, 1893, Mr. Hill resigned to accept a similar position in the mechanic arts high school, Boston. During Mr. Hill's connection with the school a fine building was erected for its accommodation, and the number of pupils was nearly doubled. In accepting his resignation the school committee expressed their high appreciation of his services, and also that of the community, by the adoption of the following resolution: "Resolved, That in accepting the resignation of Mr. Frank A. Hill, head master of the English high school, the school committee of Cambridge unanimously desire to put upon record and to express to Mr. Hill their high appreciation of his work in planning the fitting up of the school building, in the organization, administration, and development of the school, and in the moral and intellectual training of his pupils. In every department he has won the high esteem of this committee and of the

citizens of Cambridge, and he will have, in his proposed work in Boston, their hearty regard and good will."

In seeking a successor to Mr. Hill, the committee selected Mr. Ray Greene Huling, the head master of the high school in New Bedford, and the present condition of the school shows that the choice was wisely made. Leave of absence for the school year 1893–94 has been granted to the head assistant, Miss Harriet E. Bird, that she may pursue her studies abroad. During her absence Miss Grace L. Deering, a teacher in the school, occupies her place, and Miss Lillian C. Rogers, a temporary teacher, is to do the work of Miss Deering. A sum of three hundred dollars has been expended for reference books and other books for the library.

Manual Training School. The lengthening of the course of study from three years to four is the principal change in this school. On account of this change the number of recitations has been increased, and now Mr. Warner gives his entire time to this department of the English high school. The new building erected by Mr. Rindge for the accommodation of the academic work of the manual training course was occupied on the first of April. Since then only the pupils in the senior class have been obliged to go to the high school building for any part of their instruction. The cost of furniture for the new building was nearly fifteen hundred dollars.

Wellington (Training) School. As the Wellington school serves a double purpose, being at once a regular ward school and a training school for teachers, it seems well to speak of its present condition in both these respects.

As a ward school it has been increased this year by the addition of the ninth grade, so that it now comprises all the primary and grammar grades. This was made possible by the additions to the building which were completed last spring. These consist of six large, well-lighted, well-warmed, and well-ventilated rooms, capable of seating three hundred pupils; a recitation room furnished with tables and apparatus for the ninth grade to do the work in physics; and a good assembly hall. This hall is furnished with one hundred settees capable of seating about four hundred fifty people, with a good piano and a few pictures. Besides these rooms for the use of the pupils, there

are rooms for the master and for the teachers, convenient coat rooms, closets, etc. The teaching in the primary and in the three lower grammar grades is done entirely by the members of the training class, advised and assisted by the master and his assistants. The seventh grade is taught by a graduate of the training class whose work while a member of this class was in the three upper grades; and the eighth and ninth grades have permanent teachers of large experience.

As a training school this school gives to young and inexperienced teachers an opportunity to try their powers in the real work of teaching and of the discipline of the schoolroom, under the friendly eye of experienced teachers whose whole care it is to help them by advice and example; and it acts also as a safeguard to the city by testing these young applicants for positions in the city schools, and dropping out those who show themselves unequal to the work required. No one is admitted who has not had a high school education followed by a normal school training or a college training, or who has not had advantages and opportunities which may be considered equal to these. Fourteen graduates of this school have been appointed to positions in the Cambridge schools since January, 1893. At the present time there are seventeen in the training class. This year the number of master's assistants has been increased by one, Miss Mary I. Vinton, formerly master's assistant at the Allston school; and leave of absence has been granted on account of ill-health to Miss Sarah J. Gunnison, the assistant in charge of the primary grades, and her place has been filled by Miss Eusebia A. Minard.

The management of this school presents a difficult problem. The pupils must be brought up to the required standard of the primary and grammar schools, the members of the training class must have a fair opportunity to show what they can do, and they must be constantly overlooked, advised, and encouraged; and at the same time, by the limitations of the committee, the expense per pupil of this two-fold school must not exceed the average expense of pupils in the other primary and grammar schools of the city. Two thousand dollars has been expended during the year in furnishing the new rooms, and in putting the old furniture in good condition. A piano has also been bought at a cost of three hundred dollars.

Grammar Schools. The course of study for these schools has been revised and the work arranged in two courses, one to be accomplished in six years and the other in four years. That the graded system of schools may not interfere with the progress of any pupil, a teacher has been appointed in each of the large grammar schools to give personal instruction to such pupils as seem able to do the work in less than six years, and to those who without this instruction would require more than six years.

In June, 1892, it was ordered that, beginning with September, 1892, there should be added to the course in mathematical study geometrical forms and relations, including mensuration, leading up to and including the demonstration of simple theorems in plane geometry in the last year; and that, beginning with the school year 1893, instruction be given in elementary physics, experiments and laboratory work, with some exact weighing and measuring. Geometry, therefore, has been taught in the schools for more than a year, and physics since last September. Each school has been supplied with two laboratory tables, each ten feet long, which accommodate sixteen pupils at a time, and with sixteen sets of apparatus. The tables cost twenty-three dollars fifty cents apiece, and the cost of the apparatus was nearly five dollars a set.

As the teaching of physics was new work in the grammar schools, it seemed desirable that those who were to give the instruction should have an opportunity to see the work in the several schools. Accordingly it was arranged that once in two weeks the teachers should spend the last hour of an afternoon session at one of the schools, and that the teacher of physics in that school should give a lesson, after which there should be a free interchange of opinions in regard to the best method of teaching the subject. The teachers have found these meetings interesting and profitable.

Primary Schools. At a meeting of the school committee on February 18, 1892, it was ordered that a special committee of five members, of whom three shall be members of the standing committee on text-books, be appointed to consider the courses of study in the grammar and primary schools, with a view to shortening and enriching the program. This committee gave special attention to the grammar schools, and their report recommended

important changes in the course of study for them. The report was accepted and its recommendations were adopted at a meeting of the school board on June 2, and it was printed in the annual report for 1892. At that time it was further ordered that a committee of five be appointed to examine and report upon the course of study in the primary schools. As the report of this committee explains the changes that have been made in the work of the primary schools during the year, it is here given in full.

REPORT ON PRIMARY SCHOOL INSTRUCTION.

The first subject to which your committee wish to call your attention is the

SUPVERISION OF THE PRIMARY SCHOOLS.

The special committee of 1892 pointed out the need of careful supervision for these schools, and on their recommendation a special teacher was appointed to do this work. It is the pleasant duty of the present committee to report that the work has been done in the most admirable manner, and that the results have proved the wisdom, both of this method of general supervision and of the choice of the person who now fills this office. But this is not enough. As the schools are now constituted, the principals are absolutely confined to their own schoolrooms throughout the entire school session. They are responsible to a certain degree for the character and standing of their schools; but they have no opportunity to influence any class but their own, or to weigh well the influence of any other teacher, and, what is of still more importance, they cannot make sure that the different grades all work together in the best way for the moral and intellectual advancement of the children. The primary schools are not organic wholes: they are mere aggregations of grades under one roof. To remedy this defect, which is the result of the circumstances and not in any way the fault of the principals themselves, and which cannot be cured, much as it is helped, by supervision from the outside, this committee earnestly recommend that a special teacher be appointed to each of the primary schools which consist of seven or more than seven rooms; and that, for the present, the committee of

the training school be asked to provide a substitute teacher to go at intervals to the assistance of each of the principals of the smaller primary schools, and so set her free to supervise her own school. They believe that the good effects of this measure would soon be evident in the increased rate of promotion from room to room, and from these rooms into the grammar schools.

SPECIAL TEACHERS.

There is very great need in the primary schools of this class of teachers, who, besides taking occasional charge of the principal's room, would be free to perform the same duties that are performed by such special teachers in the grammar schools. Many of the rooms are so over-crowded that it is impossible for the regular teacher to do justice to both the quick and the slow minds. And in the spring a new class is admitted into the lowest grade, which gives additional work and perplexity to the teacher there. With judicious help some of the children who enter then, with already a little knowledge of reading, writing, and arithmetic, could catch up with the regular class and go on with it in September, and so complete the course in two years and a half, instead of taking three years for it, or even three and a half, as these April children often do. Even half a year saved is a great gain, both to the children who have only a few years of school life before them and to those who are beginning their education with the expectation of having a college course. And when we consider that many of these children are six or seven years old when they enter, the need of this effort to help them along seems imperative. The regular teacher cannot take the time for this work, especially if she has fifty children to look out for, even if she has the strength. And these special teachers could be of the greatest service to those children who for one reason or another are constantly dropping behind. Dawdling is cumulative, and when children begin to be listless and indifferent they drop down into almost hopeless apathy with surprising rapidity. And they are easily discouraged. If they are slow, or feeble, or irregular in their attendance, they are dazed by the amount of their comrades' knowledge, and they do not know how to try to catch up with them. Young children

need a great deal more care and attention than older ones, but under our present system they do not have as much. When we compare our crowded, meagrely appointed primary schools with our luxurious high schools, we cannot help suspecting that one reason why popular education, here as elsewhere, has failed to fulfil the hopes of its best friends, is that we are gilding the dome of a structure that is founded on loosely driven piles.

The fact that the children who enter the primary schools are generally nearer six years old than five (the average age of entrance in September, 1892, was five years and eleven months), while nearly one-fourth of them take four years instead of three to go through, partly accounts for the fact that on the average they are nearly ten years old when they leave the primary schools in June, and quite ten when they enter the grammar schools in September. This is two years older than the age counted upon in the general plan, for it is certainly expected that the average age of entrance into the grammar schools will be eight, and it ought not to be much greater. By and by, when there are kindergartens enough to accommodate all the little children, the age of entrance into the primary schools can be somewhat regulated; for it is understood that the children are not expected to remain in the kindergartens after they are five years old, and they must pass on. But at present the number of children that we can thus control is very small compared with the whole number ; and as the law does not require any one to send a child to school until he is eight, we are powerless to help this matter. But we can perhaps diminish the number of the children who remain four years.

In considering this question of age we must remember that the average is often brought up by the presence of children twelve or even fifteen years old, and here we are brought face to face with an evil too serious to go unchecked. In some parts of the city these children come to the lower schools because they cannot speak or understand English well enough to go where they naturally belong ; in other cases they have been kept back by serious illness ; and sometimes they are feeble-minded. All these children are entirely out of place. Whatever the cause that has kept them so ignorant that they cannot enter the grammar schools, they do not belong in the primary

schools. They are too large for the chairs and desks; they are too mature for wholesome companionship with the little children; and if they are feeble-minded they are too heavy a burden to be imposed upon the schools, which ought to be full of eager child life. If there were room, your committee would recommend that these older children make a sub-grammar grade in the grammar school buildings; but as this is manifestly impossible at present, they can only hope that an extra teacher may be able to devise some method by which these children can be helped along faster, and enabled to keep at least within sight of boys and girls of their own age.

TIME OF ADMISSION IN SPRING.

At present children are admitted in April, which in our New England climate is perhaps the real beginning of spring. But when they come with absolutely no book knowledge, there is hardly time enough in the three months that intervene between their entrance and the long vacation to give them a good start; and so it happens that many of them have to begin over again in September, and this time seems to be wasted. Your committee would therefore recommend that the time of admission be changed to the first of March.

THE COURSE OF STUDY.

The course of study for the primary schools, as it now stands, includes Reading and Spelling, Writing, Number, Language and Literature, Music, Drawing, Physiology and Hygiene, and Moral Instruction.

NATURAL SCIENCE. BOTANY.

There is no formal provision made for natural science; but the teachers are strongly recommended to give some oral instruction every day, and the following subjects are mentioned as "among those most likely to interest and profit the pupil: Color, Form, Place, Size, Qualities of Objects, the Human Body, Plants, Animals, and Familiar Things." In many parts of the city this work has been done well and with admirable

results. Boxes of growing plants in various stages of development, trays of minerals amounting in some cases almost to the dignity of a " collection," and " curiosities " proudly treasured as the beginning of a museum, plainly testify that many of the teachers are in sympathy with the world about them and ready to help their pupils to understand its mysteries, and that the children respond eagerly to any instruction in matters that they really want to know about. It seems to your committee that the time has come to introduce the subject of natural science definitely into the curriculum of the lower schools, at least, and to provide, as far as possible, that it be well taught. Some one branch of this wide subject must be chosen to begin with, but it is not of so much consequence what particular branch is taught as how it is taught. The knowledge acquired, useful as it may be, is of small importance compared with the mental training. To be really valuable the method employed must be strictly scientific. The child must be led to observe for himself, to draw logical conclusions from what he observes, and to express his clear and definite thought correctly and graphically. For several reasons which seem to them to carry weight, your committee recommend that botany be the branch of natural science to be introduced into all three grades of the primary schools next year, and that arrangements be made to have the necessary instruction and advice given to the teachers by some competent person. Botany is perhaps, on the whole, the department of natural science that the teachers are already most familiar with, and it is sure to be interesting to the children. It deals with things that they are naturally fond of, that they see about them every day, and that they can themselves own and take care of, however poor they may be. And if a genuine and intelligent interest in plant life can be formed early in these children, and fostered as they become capable of understanding more and more about it, it will be a constant source of wholesome pleasure to them. There is in the city one of the best botanic gardens in the country, and it is pitiable to see how little it is appreciated by the mass of the people who might enjoy it. Perhaps we can train the rising generation to use more freely the opportunities that lie within their reach.

It will not be a difficult matter to find some one to give the

special instruction to the teachers on terms that the city can well afford; and your committee feel sure that the teachers will respond to this movement with alacrity. As we have seen, many of them have already done what they could towards introducing the teaching of science; and there is every reason to believe that they will, as a body, heartily welcome your action, should you decide to adopt this recommendation.

PHYSICAL EXERCISES.

The matter of physical exercise has also been left almost entirely to the teachers, the instructions of the committee being, "Have some simple, pleasing exercises not less than twice each session." And here again some of the teachers have led the way. Here and there throughout the city those who have had special training in the Ling system of Swedish school gymnastics have used it with their classes; and others, stimulated by their example or moved by inward conviction, have formed themselves into classes and hired some one to train them. It is well that the school board should now take some official action; and, after a careful investigation of its merits, your committee recommend that the Ling system, as modified and adapted for the primary schools of Boston by Mr. Nissen, be introduced into the primary schools of Cambridge, and that arrangements be made to give the teachers such instruction as may be necessary to enable them to carry on this work successfully. The committee limit their recommendation of systematic gymnastics to the primary schools, simply because they were appointed to consider their needs only. They also recommend that the committee on the training school be requested to furnish instruction to the members of the training class, so that they may go out already prepared for this work.

In urging this measure the committee have been much influenced by the noticeably good effect which these gymnastics have on the order and discipline of the schools where they are well taught. Whether it is due to the fact that they equalize the circulation of the blood, as it is claimed they do, and so put the child into a wholesome state of body and mind, or whether it is due to the habit of prompt and implicit obedience to the

word of command which they establish, your committee are unable to say. Probably it is due in some measure to both these causes, but the fact seems to be beyond question.

NUMBER. WRITING.

In considering the subjects already well established in the course, this committee find only one or two suggestions to make about either number or writing, which seem to them, on the whole, well taught. In regard to number they would recommend that very simple examples in subtraction and division, as well as in addition and multiplication, be performed in the third grade, that the children may be early and well grounded in all the fundamental operations of arithmetic. In regard to writing they would suggest that, wherever the relative position of the chairs and desks will permit, the children be required to do all their writing squarely facing their desks.

It seems well to this committee that paper should be used more and more in place of slates. It is now so cheap that the matter of expense need hardly be considered, it is easier for the children to use neatly and quietly, and it is thought to be better for the eyes. They would here recommend that very great caution be used in requiring the children to copy numbers from the board. It is a difficult matter to keep the place in copying long lines of figures, the light is not always favorable, and the strain on the eyes and on the nervous system may be very great. They fear that it sometimes happens that by the time the child has got together the materials for his intellectual work he is not in a condition to do it to the best advantage.

READING AND SPELLING.

The fundamental subjects of reading and spelling present grave difficulties, which the committee regret to say the methods now in use do not seem to have overcome. Too many of the pupils, even in the grammar grades, read uncertainly as if they were still groping their way, and show an extraordinary timidity in attempting to pronounce even common words with whose printed or written form they are not perfectly familiar.

This is, of course, due to the want of sufficient practice, and it is difficult to see how children who come from illiterate families, where books are unknown, can ever get practice enough to read fluently, especially now that the city owns all the text-books and these must be left behind at the schoolroom door. But perhaps the matter can be somewhat helped by a change of method; and your committee therefore recommend that the sentence, the word, and the phonic methods all be used, hoping thus to get the good points of all three. It is through complete sentences that the child most quickly and most thoroughly gets the idea that printed or written matter stands for thought; but when he has mastered that idea, which he ought to do very early in the course, he must learn to know the words as separate individuals. This is an almost hopeless task unless he notices the letters and the constantly recurring combinations of letters, and is made perfectly familiar with their phonic value. The letters and the sounds in the language are limited in number, the words are practically countless, and the sentences are really so. It is useless to teach English as one would teach Chinese. The child must have a careful, persistent drill in the elements, in both their form and their sound; and after he has mastered the first difficulties he must read. The only way to learn to read is by reading. And it would be well, as soon as possible, to have two entirely distinct exercises: one for the most careful training in the mechanism and art of reading, in the clear, distinct articulation, the exact pronunciation, the rigid adherence to the texts that are necessary for good reading; the other for pleasure, pleasure both for the child himself and for the other children. Nothing can give an intelligent child a greater stimulus to read well than the need of giving the ideas, as fast as he can pick them up from the book, to a dependent audience. This exercise should be as free as possible from interruption by the teacher, who should give help when it is absolutely needed, but without any attempt to "draw out" the child or the class, and without making any point of correction or allowing the other children to correct; and it should be free from any criticism afterwards. In fact, it should be the result of such training as the child has had put to its legitimate use, reading for pleasure; and the more the interest centres in the matter read and the less

in the reader, the more simple and natural the reading will become. Of course a wise teacher will note the faults and try to correct them afterwards, in the next day's or the next week's drill lesson; and if she is thoughtful and observant and able to watch the children without too many preconceived ideas, she may get a good deal of light on the kind of drill they most need. She will do all this without making the connection between the two exercises so obvious as to destroy the sense of freedom in the pleasure lesson. The books to be read in this lesson must be carefully chosen. They must be easy enough to make it possible for the children to read them quickly, interesting enough to keep the attention of the class, and, as soon as possible, valuable enough to be worthy of becoming a permament possession of the children's minds.

As a help in the matter of spelling, one of the teachers, who has had many years' experience in primary school work, has, at the request of this committee, made a list of some fifteen hundred words that should be mastered before the child leaves the primary school. The words are divided into classes: those that can be advantageously used for drill in the sounds of the vowels and the combinations of vowels, and of the consonants; those that the child is sure to need in making sentences and in writing from dictation; and a few others, such as proper names, words that experience has shown it is hard for the children to remember, etc.

In teaching this or indeed any list of words, it would be well to make frequent use of the printed letters that come in little boxes prepared for schools. The children would thus, by constant practice in picking out the letters, become perfectly familiar with their printed form, and moreover have a pleasant change of occupation. The art of writing is so new to them that it must easily become fatiguing; and games of letters thoughtfully arranged might be of very great help in several ways.

With all the light we can get, however, it is still difficult to say just how spelling can be most easily and successfully taught; but the tale of a little boy who wrote 'gone' correctly fifty times, and then, when he had an important communication to make to his mother, turned over his slate and wrote

carefully on the other side, " I have gorn over to Johnny's," shows that unless the connection is made between the words in the book and the words in real life the most elaborate training counts for nothing.

LANGUAGE AND LITERATURE.

And so it is with language. The fact is strikingly apparent that, in spite of years of schooling, boys and girls pour out of our schoolhouses every day with such expressions as "It wasn't me, —Tom done it," or "I guess likely I shall go," on their lips. Your committee wish to recommend that constant practice in making sentences, and constant exercise in writing from dictation the best English prose and in committing to memory the best English poetry, be given in our primary schools ; but they wish yet more strongly to urge that correct English be insisted upon at all times and in all the grades of our schools, and that not only no composition but no exercise whatever be accounted good in any grade unless the English is correct. And your committee believe that, if regular teaching in natural science is given, the facts thus acquired will be the very best material for the training in language, and that, because the child has something of his own to say, he will take a real interest in learning to say it.

Literature is not too large a term to use even in connection with the primary course. The stories of Cinderella and Little Red Riding Hood and of those delightful Three Bears, of Robinson Crusoe and his man Friday, of Dick Whittington and his Cat, are literature, for they have fed the imagination of generation after generation of English-speaking children and they are familiarly quoted by all sorts and conditions of men. Books of this kind can easily be read and re-read, if the children ask to re-read them,—as they naturally do if they like a story, and as it is wholesome and right that they should do,—in the time set apart for reading for pleasure.

Perhaps after years of such daily reading the taste for honest literature may take root firmly enough to grow and flourish in spite of the corrupting influence of the cheap sensational trash that is flooding the world to-day. It is a good deal to hope, but it is the real end that the teacher ought to have

in view, and she must keep it in view, even though it seem a long way off. There has never been a time when it was so easy to get good literature in a cheap form for schools as it is now ; but it will always be hard to get anything of real literary value that the youngest children can read for themselves, and, until they have acquired some little facility, the teacher must do as least part of the reading for pleasure herself. Judiciously done, and not overdone, this would be a very valuable exercise, full of stimulus and cultivation for the children and vividly enjoyed by them, for every one knows that they can listen with thorough appreciation to books that are much beyond their power to grasp for themselves.

MUSIC AND DRAWING.

Music and drawing are provided for by the appointment of special supervisors to take entire charge of these subjects, but it would not be wise to make of them merely matters of technical training. The children sing little songs for pleasure aside from their regular lesson ; sometimes, perhaps, under the direction of a wise teacher, they sing to clear the over-charged nervous atmosphere of the room ; and they sing national airs to stir in their childish hearts that strong and subtle emotion, love of country. Drawing should also made to serve its use in the general training. It is certainly not wise that a child should wait until he can draw well before using his pencil to illustrate his thought. The making of a very poor thing (which, perhaps, one would call a 'scrawl' if it were not so carefully done) is sometimes a most valuable help to a child in his effort to think out what he means, and wise teachers will freely use this help. If lessons are given in botany, the children can show the shape of the seed, the form of the plant at the different stages of its growth, or the parts of the flower, much more clearly by drawing than by language ; and in most subjects one is a valuable supplement to the other. This use of drawing as a means of illustration, if wisely managed, ought to stimulate a child's interest in his technical training, for he can be made to see how much he needs it. Of course this should be done by gentle and slow degrees, so that he may not grow too much dis-

couraged and become shy about expressing himself with his pencil.

PHYSIOLOGY AND HYGIENE. MORAL INSTRUCTION.

These are required by law. The statutes are as follows:

"Physiology and Hygiene, which, in both divisions of the subject, shall include special instruction as to the effects of alcoholic drinks, stimulants, and narcotics on the human system, shall be taught as a regular branch of study to all pupils in all schools supported wholly or in part by public money."

"It shall be the duty of all instructors of youth to exert their best endeavors to impress on the minds of children and youth committed to their care and instruction, the principles of piety and justice, and a sacred regard to truth; love of their country, humanity, and universal benevolence; sobriety, industry, and frugality; chastity, moderation, and temperance; and those other virtues which are the ornament of human society, and the basis upon which a republican constitution is founded; and it shall be the duty of such instructors to endeavor to lead their pupils, as their ages and capacities will admit, into a clear understanding of the tendency of the above-mentioned virtues, to preserve and perfect a republican constitution, and secure the blessings of liberty, as well as to promote their future happiness, and also to point out to them the evil tendency of the opposite vices."

The law is certainly full and explicit, and leaves no doubt in the mind that the Commonwealth expects its public schools to endeavor to build up that basis of character on which alone republican institutions can safely rest. And this can be done most easily and effectively while the minds and hearts of the children are fresh and tender and most easily impressed. It is one of the most serious duties of the primary schools.

The instruction in physiology and hygiene in these lower schools must of necessity be confined chiefly to the oral teaching of the simple laws of health, but these are of the greatest consequence. Some of them can be taught practically. Cleanliness, for example, that virtue that ranks next to godliness, can be insisted upon to some extent. In dealing with all these matters, perhaps especially with the effects of alcohol, the teachers should be careful to found their instruction on scientific truth, or the children will not believe them or be guided by them when they grow older and temptations multiply.

While your committee do not wish to recommend that a special time be set apart for moral instruction, lest it grow formal and perfunctory and so defeat its end, they wish to take this opportunity to emphasize its importance. Cheerful, intelligent obedience to the law of the school may easily grow into cheerful, intelligent obedience to the law of the land; and for many of our children the training of the school is the only training they will ever have in the love of truth and justice, of courtesy and kindness, or even in the love of country. The need of instilling the elements of patriotism into the little children of our public schools grows greater every year; for they come more and more from foreign families, and have no American traditions behind them and no love of the soil born in their veins. This can be done in many indirect as well as in many direct ways. It had been sucessfully taught in that room where, after the whole class had been struck dumb for the moment before the difficulty of defining 'freedom,' a little girl suddenly sprang to her feet and exclaimed in a tone of absolute conviction, "It's Hail Columbia!" And it seems hardly possible that many out of the mass of children who stay five or six years in our public schools could rise and stand every time they sing "America," if that were the custom, and then go out into the world without some association of respect, at least, if not of affection, connected with it. It is often in these subtle and silent ways that tendencies are formed and characters made. This whole matter must, however, be left to the teachers. Committees cannot reach it; they can only bear witness to its importance.

PROGRAMS FOR RECITATIONS AND FOR DESK WORK.

Whatever the course of study, the teachers must certainly have very definitely in mind what they want to accomplish each year, and about how much time it is necessary to spend on each subject to bring the children up to the desired point. In the course of study of the Boston schools, the number of hours a week to be devoted to each subject is specified. Your committee hardly feel that they can do this. It can be done better by the superintendent and the special primary teacher, if in their

judgment it is wise to do it; but the committee do feel that they cannot report on the needs of the primary schools without emphazing the fact that the teachers in the lower grades need a careful time schedule for each day just as much as the teachers in the upper grades do. Perhaps there is even greater danger that without it the time there will slip unprofitably away. Of course the teachers need not be slavishly tied to it, nor feel unable to change the order, or even the whole plan, if circumstances require; but time is sure to be wasted by desultory work anywhere. And it is very evident that a great deal of time is wasted, and that a great deal of mischief is bred of idleness between the recitations. This evil is not confined to the primary schools, but its cure can begin there, and your committee believe that a program for desk work should be written upon the board every day where every child can see it; that this program should be carefully made and often varied; and that it should contain work enough to keep the brightest child busy all the time that he is out of class. The children should follow this program according to their respective capacities; for there is no need of uniformity, no possibility of it, in fact, and no expectation that the whole of the work planned out will be done by every child every day. There are, indeed, some decided advantages in having several occupations going on at the same time; the children learn independence and acquire the power of concentration, and they have no temptation to copy from each other. By judicious changes in the order, however, each child could be made to do a fair amount of all the different kinds of work each week. But it is not the amount of work that is the principal end to be gained. The real object of this program is to teach the children the invaluable art of taking care of themselves, and of keeping wholesomely busy without asking questions or depending upon the teacher for explanations when she is occupied with some one else. In this way an immense amount of friction might be saved both for the teacher and the children. Experience has shown that even the youngest classes can very soon learn to read such a program and to follow it intelligently, and that they will do so. In these days when so much stress is laid on the art of teaching, there is danger that the art of learning may be neglected; and the most serious criticism that has ever

been made upon our schools is that they do not train the pupils to read and think and study for themselves. If the children in the lowest grades can be made to feel that they must depend upon themselves, at least to the extent of following out a written program, which is certainly all that can be expected of young children, they may gradually learn self-reliance and presently be able to make out their own program, and in course of time to work systematically without one; and so one long step will have been taken towards curing this most serious of all defects. The work accomplished by the children must of course be inspected by the teacher, but the task need not be as formidable as it might at first appear. A trained teacher can take in at a glance the value of a great deal of clay modelling or stick-laying or paper-folding, or even of a few lines of writing, either of words or of music; and the number work, if done on paper, might sometimes wait for the next day's recitation.

MANUAL TRAINING.

Your committee cannot neglect to mention a subject which, at the present time, is occupying the attention of many who are prominent in the educational world, and which is exciting the greatest interest in the community in general,—manual training. The subject is an important one, and it presents some serious difficulties, and in the judgment of this committee it cannot be wisely considered in connection with the primary schools alone. The gap is very great between the careful training in this direction in the kindergartens and the admirable training which the boys of the English high school get in the manual training school, that institution of which the city is so proud and for which it is so grateful to one of its most public-spirited citizens. A slender line of work in connection with drawing and a little sewing for the girls alone serve to bridge over this long space. This committee would therefore recommend that a committee of five be appointed to consider this subject in connection with the whole course in the public schools of this city.

RECOMMENDATIONS.

In conclusion your committee present the following orders for your consideration :

1. Ordered, That, beginning with the school year 1893–94, a special teacher may be appointed in any school of seven, or more than seven, rooms.

2. Ordered, That the committee on the training school employ, at a salary not exceeding four hundred dollars a year, two teachers, in addition to the number now authorized, to act as substitutes when needed; and, when their services are not so required, to act as special teachers in the primary schools to which they shall be assigned by the superintendent.

3. Ordered, That pupils shall be admitted regularly to the primary schools on the first school day of March and of September only.

4. Ordered, That, to secure the training given by the study of natural science, botany be introduced into all three grades of the primary schools in September, 1893.

5. Ordered, That the Ling system of Swedish gymnastics, as adapted for the primary schools of Boston, be used in all the grades of the primary schools of Cambridge.

6. Ordered, That the committee on text-books and courses of study be hereby authorized to employ suitable persons to give instruction in botany and in the Ling system of Swedish gymnastics to the teachers of the primary schools.

7. Ordered, That a committee of five be appointed to consider the subject of manual training in connection with all the grades of the city schools.

ELLEN A. GOODWIN.
WM. A. MUNROE, *Chairman.*
FREDERIC W. TAYLOR.
ANNE C. STEWART.

The foregoing report and orders were adopted June 1, 1893. The report is signed by only four members of the committee of five, as the term of office of one member expired December 31.

During the year the course of study has been revised; a special teacher appointed in each of the three largest schools; a

larger number of substitute teachers employed; the Ling system of Swedish gymnastics introduced, and a special teacher of botany and one of gymnastics appointed.

By this action of the committee the suggestions and recommendations made in the report have been carried into effect.

Kindergartens. There are now seven kindergartens, a new one having been opened in the Gannett schoolhouse last April. The number of pupils is three hundred twenty-six, and the number of teachers thirteen. The cost of these schools the past year has been nearly six thousand four hundred dollars, or about twenty dollars per pupil. Their educational value becomes more and more apparent every year, and it is hoped that their number may be steadily increased until all parts of the city share alike in the benefits to be derived from them.

Evening Schools. There are four evening schools, one high school and three elementary schools. By the rules of the committee these schools begin on the second Wednesday of October, and continue every Monday, Wednesday, and Friday evening for fifty evenings. No complete account of them can therefore be given at the time of writing the annual report.

The evening high school is held in the English high school building. Mr. Joseph A. Coolidge is the principal. Instruction is given in arithmetic, book-keeping, penmanship, English composition, English literature, civics, history, algebra, geometry, phonography, Latin, French, and German. The average attendance of the school for 1892–93 was one hundred forty-seven, and the number of teachers was nine. The cost of instruction per pupil was nine dollars twenty cents. At the graduating exercises the mayor presented diplomas to such pupils as had satisfactorily completed the prescribed course of study. The committee on evening schools recommend that higher attainments be required for admission to the school.

The evening elementary schools for several years have occupied rooms in three of the grammar school buildings, the Allston, Putnam, and Webster. No essential change has been made in their organization and management since they were provided with the ample accommodations they now have.

They seem to be doing good work, and every facility should be afforded to make them more efficient. It certainly is a hope-

ful sign when so many persons show such an earnest desire for improvement as gladly, after a toilsome day's work, to spend their evenings in these schools.

The statistics for the schools for 1892-93 are as follows: Average attendance in the Allston school, eighty-eight; cost of instruction per pupil, seven dollars thirty-nine cents. Average attendance in the Putnam school, one hundred twelve; cost of instruction per pupil, eight dollars forty-one cents. Average attendance in the Webster school, seventy-three; cost of instruction per pupil, seven dollars twenty-eight cents.

Evening Drawing School. This school is under the supervision of the director of drawing for the day schools. The average attendance of the school for 1892–93 was: Free-hand class, fifty; mechanical class, ninety-two. The cost of instruction per pupil, allowing five hundred dollars of the director's salary for his services in the school, was fourteen dollars thirty cents. At the close of the school, diplomas were given by the chairman of the committee on drawing to such pupils as had satisfactorily completed the prescribed course of three years.

Drawing. Mr. Walter F. Brackett who was elected director of drawing in June 1889, resigned his position in 1893. He is now superintendent of the manual training school in Haverhill, Mass While director, he prepared for the Cambridge schools a very complete outline of a course in drawing, and this course is still followed. Mr. James M. Stone was elected Mr. Brackett's successor, and he entered upon his work at the beginning of the school year in September. On the recommendation of the committee on drawing it was voted that an assistant teacher of drawing be employed, and Miss Lucia N. Jennison was elected to that position. Her work is principally in the primary schools.

Music. During the year the outline of the course of study in music has been revised, and a manual for the first grade prepared. Music is now taught in all the grades of the schools. At the graduating exercises of the Latin school and also of the English high school the music, both vocal and orchestral, was furnished by the pupils of these schools. The two schools have an orchestra of fifteen pieces.

Sewing. No change has been made in the work of sewing. Instruction continues to be given to the fourth, fifth, and sixth

grades for three-quarters of an hour, once a week in each grade. By the death of Miss Jones the city lost the services of a faithful teacher. Miss Jones was appointed in 1890, when sewing was introduced into the schools.

Truant Officers. In January, 1893, the number of truant officers was increased from three to four. With this increase of force, it was possible to investigate more thoroughly the cases of absentees. By the report of the committee on the truant officers, it appears that twenty-five hundred more cases were investigated than last year; and that, notwithstanding this large increase in the number of cases investigated, there was no increase in the amount of truancy, owing it is believed to the prompt and vigilant efforts of the officers.

In September, the school committee received a communication from the overseers of the poor to the effect that, by closing the truant school, the space it occupies in the almshouse could be utilized in such a way as greatly to increase the comfort of the unfortunate people in the institution.

The school was closed, and twelve truants were sent home on probation. Not until January 12, 1894, was any legal provision made for the further care of these or any other truants.

Schoolhouses. A larger number of schoolhouses than last year are in a satisfactory condition. New plumbing has been put into the Dunster, Holmes, Reed, Riverside, Tarbell, Wyman, and Agassiz school buildings. Similar work should be done in several of the other buildings the coming year. The janitors, now under the control of the school committee, have, as a rule, been faithful and efficient. In December, the committee on schoolhouses recommended that, "In view of the importance of the work and the serious responsibility incurred, the Civil Service Commissioners be requested to include in their classification the janitors of those schoolhouses which are heated by steam or hot water, or in which the Smead system of heating and ventilation is used, in order that only efficient persons may be eligible to appointment." This recommendation has been carried into effect, and only such persons as are found competent will be appointed in the future.

The committee also suggested the advisability of having a competent mechanic appointed as head janitor, who should di-

rect the other janitors and oversee their work, attend to the placing and removal of desks and other furniture, and make the numerous small repairs about the buildings.

A new schoolhouse has been built at the corner of Broadway and Sixth street, to take the place of the old Bridge schoolhouse on Pioneer street, erected in 1836. The new schoolhouse contains six rooms, but only four are finished. It is well-heated and ventilated. The building cost sixteen thousand eight hundred dollars, and eight hundred dollars was expended for the furniture. The land was owned by the city. The school has been named the Parker school, in honor of the Rev. Joseph W. Parker, D.D., who for ten years was a member of the school board.

A new schoolhouse is needed in Ward Three and one in Ward Five; and in the near future one will be required to accommodate the pupils of the Belmont district.

Teachers. There are now two hundred ninety-seven teachers in the schools of Cambridge. Forty of these have been appointed during the year. No person is eligible to an appointment in the grammar and primary schools who has not had advantages equivalent to a high school course, a normal school course, and a year's experience in teaching; and it is the duty of the committee on the examination of teachers to enquire and report as to the qualifications of all persons nominated to be teachers in these schools and in the kindergartens, below the grade of master, before final action on such nominations is taken by the board. The importance of the duties of this committee can hardly be over-estimated. Without good teachers there can be no good schools.

Miss Elizabeth E. Dallinger. For thirty-five years Miss Dallinger taught in the Bridge school, and she was its principal at the time of her resignation, September, 1892. Since the last annual report was issued Miss Dallinger has died. It seems fitting that a recognition should be made of her peculiarly valuable service in connection with the Bridge school. This school was in one of the least favored parts of the city, and many of the little children who came to it needed a mother's care even more than a teacher's instruction. In Miss Dallinger they found both mother and teacher.

Harvard Lectures. Last year three courses were given to the grammar school teachers of Cambridge—one each in geography, geometry, and physics. This year the University has provided courses in English composition, in physics, and in botany; and these courses are open not only to teachers in Cambridge, but to those of other places. The purpose of these lectures, and the conditions on which they were offered, will be seen by the following quotations from the circular issued by the University in announcing the "Courses in Education and Teaching" for the college year 1893–94.

1. Training course in English Composition for grammar and primary school teachers. Mr. GATES.

This course is intended to supplement the training which the teachers have already received in expressing their own thoughts in correct English, so that they may be better able to plan and to criticise intelligently the written work of their pupils. It is not intended to lay out a course of instruction for primary or grammar school pupils, but to give the teachers thorough personal instruction in this important subject. Every member of the class will be expected to write a careful composition each week. The compositions will be examined and corrections and suggestions will be noted upon them. On Saturday mornings at nine o'clock the class will assemble for an informal exercise, including suggestions as to the best methods of English composition, and the discussion of selected essays. These exercises will occur on each Saturday during the regular lecture period in the college, making thirty exercises in the course of a year.

The class will be limited in number to thirty. While intended only for grammar and primary school teachers it may be possible to receive one or two high school teachers.

The fee for the course will be $20.00 for the year, except to Cambridge teachers, who, by vote of the Corporation of the University, will be admitted without fee; but it is expected that such teachers, or the City of Cambridge, will provide for any extra expense for correcting their exercises.

2. Training course in Experimental Physics for grammar school teachers. Assistant Professor HALL.

The course in experimental physics offered last year to the grammar school teachers of Cambridge will be repeated during the year 1893–94. Meetings will be held in the Jefferson Physical Laboratory on Saturdays from eleven to one. The course is intended to give teachers the ground-work in the simpler subjects of experimental physics. The experiments will include among others those adopted by the Cambridge school committee for the Cambridge grammar schools; but it is not intended that the laboratory work shall be simply a duplicate of the school work. In addition to the laboratory exercise it is expected that members of the class will spend not less than two hours a week in reading and in performing experiments for themselves in the grammar school or high school laboratories. The number of exercises in the course of the year will be

thirty. By the size of the laboratory the number of the class is limited to twenty-four.

The fee for the course is $20.00; but teachers of the Cambridge schools will be admitted, under vote of the Corporation, without fee.

3. Training course for primary and other teachers in Laboratory Botany. Professor GOODALE.

During the academic year 1893–94 a course in botany will be given in the laboratories of the Botanical Museum. The course is intended to teach observation and analysis, and will be conducted in part by lectures and in part by demonstrations made by the instructor ; but principally by laboratory work under the direction of assistants responsible to the instructor in charge. The class will meet every Saturday at nine o'clock during the academic year, making a total of about thirty-six exercises. The work of the course, including the general exercises will not be less than four hours weekly. The course will be limited in number to seventy-five.

The fee is $20.00 for each number ; but, by vote of the Corporation, Cambridge teachers will be admitted without fee. In addition each teacher, from Cambridge or elsewhere, will be expected to pay for the necessary botanical materials, a charge which will not exceed $3.00 for each person.

FRANCIS COGSWELL,
Superintendent of Public Schools.

IN SCHOOL COMMITTEE, Feb. 15, 1894.

Voted, That the report prepared and read by the superintendent be adopted as the annual report of the school committee for 1893, and that the secretary be authorized to append the names of the members of the committee thereto.

SANFORD B. HUBBARD,
Secretary.

Members of the School Committee for 1893.

WILLIAM A. BANCROFT, *Chairman ex officio.*

ELLEN A. GOODWIN,	EDWARD B. MALLEY,
WILLIAM TAGGARD PIPER,	WILLIAM H. CLANCY,
*ALBERT BUSHNELL HART,	CHARLES F. WYMAN,
†FRANK W. TAUSSIG,	WILLIAM A. MUNROE,
PHEBE M. KENDALL,	MARY E. MITCHELL,
ROBERT O. FULLER,	GEORGE P. JOHNSON,
ALPHONSO E. WHITE,	CAROLYN P. CHASE,
ANNE CLARK STEWART,	FREDRIC W. TAYLOR.

*Resigned, Sept. 21. †Elected, Oct. 17.

APPENDIX.

COURSE OF STUDY FOR THE CAMBRIDGE LATIN SCHOOL.

The course of study is almost wholly decided by the requirements for admission to Harvard College. The course is also of necessity slightly varied, as the ability of the class varies. The work which is not done in any one year must be done in the next.

Fifth Class. (First Year.)

Latin, five times a week during the year. Collar and Daniell's Book for Beginners, entire.

Algebra, five times a week during the year. The Metric System.

History of England, three times a week the first six months.

English, three times a week during the year. Chittenden's English Composition ; Scott's Lady of the Lake. Daily practice in writing English.

Physiology and Hygiene, three times a week the last four months.

Fourth Class. (Second Year.)

Latin, five times a week during the year. Nepos's Lives of Miltiades and Themistocles ; Cæsar's Gallic War, four books ; Allen and Greenough's Latin Grammar.

French, four times a week during the year. Bôcher's Otto's Grammar, Part I.; Worman's First French Book ; Peppino ; Siége de Berlin.

or

German, four times a week during the year. Half of Collar's Eysenbach's Lessons ; Worman's First German Book; Höher als die Kirche; Grimm's Märchen.

Geometry, five times a week the first five months.

Physics, five times a week the last five months.

English, two exercises a week for the year. Shakespeare's Merchant of Venice; George Eliot's Silas Marner; Scott's Marmion; Hawthorne's Twice Told Tales; Longfellow's Evangeline. Theme writing twice a week.

(Third Class. Third Year.)

Latin, five times a week during the year. Cæsar's Gallic War the first two months; Virgil's Æneid the last eight months, Books I., II., III.; Latin Grammar.

Greek, five times a week during the year. White's Beginner's Greek Book, fifty-one lessons. Chapters I., II., III., of Book I. of Xenophon's Anabasis.

French, four times a week during the year. Bôcher's Otto's Grammar, Part II.; Le Conscrit; La Tulipe Noire; French Composition (Anecdotes); Memorizing of Anecdotes; Sight reading.

or

German, four times a week during the year. Collar's Eysenbach's Lessons; Die Jungfrau von Orleans; Minna Von Barnhelm.

English, twice a week during the year. Shakespeare's Merchant of Venice; Irving's Tales of a Traveller; De Foe's History of the Plague in London. Theme writing twice a week.

Some of these books are the same as those for the fourth class, because these are required of this class by Harvard College, and they have not read them before.

Second Class. (Fourth Year.)

Latin, five times a week during the year. Virgil's Æneid, Books IV., V., VI., VII.; Nepos's Lives of Miltiades, Themistocles, Aristides, Pausanius, Cimon, Alcibiades, Lysander, Thrasybulus; Sallust's Catiline; Jones's Latin Composition, forty exercises; Latin Grammar. Written exercises in Latin, or Latin at sight, once a week.

Greek, five times a week during the year. Goodwin's Greek Reader to page 110; Greek Grammar; Jones's Greek Composition, ten exercises. Written exercises in Greek Grammar, or Greek at sight, once a week the last four months.

French, every other day during the year. Mlle. de la Seiglière; L'Avare; French Composition (Anecdotes); French Grammar; Sight reading.

or

German, every other day during the year. Peter Schlemihl; Wilhelm Tell; Hermann und Dorothea; Harris's German Composition.

Physics, every other day during the year. The forty experiments required for admission to Harvard College.

Ancient History, Greece and Rome, every other day during the year.

Algebra, every other day during the year. Written examination once a week during the last five months.

English, once a week during the year. Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Irving's Sketch Book. Written essays on each of these works.

First Class. (Fifth Year.)

Latin, five times a week during the year. Virgil's Æneid, Books VIII., IX., X., XI., XII., and the Bucolics and the Georgics; Cicero, twelve orations, of which two are at sight. Also written exercises twice a week during the year in Latin Composition (including the review of Nepos for written work), or Latin at sight.

Greek, five times a week during the year. Homer I., II., III., entire, and the other selections in Johnson's Iliad; Jones's Greek Composition, last thirty exercises. Also written exercises once a week during the year in prose composition, Greek Grammar, or Greek at sight.

Geometry, every day during the first five months; every other day the last five months. Also written exercises, including original demonstrations, once a week during the year.

English, every other day during the year. This includes reading (for the first time, or in review) all the books in English required for admission to Harvard College. For 1894 these are: Shakespeare's Julius Cæsar and Merchant of Venice; Scott's Lady of the Lake; Arnold's Sohrab and Rustum; the Sir Roger de Coverley Papers in the Spectator; Macaulay's second Essay on the Earl of Chatham; Emerson's American Scholar; Irving's Sketch Book; Scott's Abbott; Dickens's David Copperfield. Written essays on each of these works; correction of false syntax.

This course of study gives, for the first, third, fourth, and fifth classes, four recitations a day Mondays, and three a day the rest of the week; for the second class, five on Mondays, and four a day for the rest of the week. The extra time assigned to the second class is necessary for a proper preparation for the requirements for admission to Harvard College in the preliminary examination. Those who succeed in passing the "Eight-Hour Requirements" in their preliminaries have less work left for the last year. Those who fail to pass any one or more of their preliminaries have as hard a year the last as the last but one. Some prefer to put a part of the work of the last year but one into the last year. Those who are good students and willing to work can complete the five years' course in four years. In the class that entered college last June there were four such; in the present first class there are three; in the second class, three; in the third class, five; and in the fifth class, eleven, who are trying to complete the course in four years. Those who do this usually stand at, or near, the head of their classes.

Text-Books in the Latin School.

English Literature. Chittenden's English Composition; Hill's Foundations of Rhetoric; Lockwood's Lessons in English; Strang's Exercises in English; Evangeline; Courtship of Miles Standish;

The Lady of the Lake; Marmion; The Abbot; Woodstock; Ivanhoe; As You Like It; Julius Cæsar; Merchant of Venice; Twelfth Night; The House of the Seven Gables; The Alhambra; Irving's Tales of a Traveller; Silas Marner; Webster's First Bunker Hill Oration; Sir Roger de Coverley Papers; Sketch Book; Macaulay's Essay on the Earl of Chatham; Macaulay's Essays on Milton and Addison; Emerson's American Scholar; David Copperfield; DeFoe's History of the Plague in London; Sohrab and Rustum; Milton's Lyrics.

French. Worman's First French Book; Otto's French Grammar; La Petite Grammaire; Grandgent's Materials for French Composition; Gasc's French Dictionary; L'Abbé Constantin; L'Avare; La Belle-Nivernaise; La Chrestomathie Moderne; La Chute; Le Conscrit; Les Femmes Savantes; Le Siége de Berlin; La Tulipe Noire; Mlle. de la Seiglière; Mlle. Solange; Peppino.

German. Worman's First German Book; Collar's Eysenbach's German Lessons; Köhler's German Dictionary; Höher als die Kirche; Die Jungfrau von Orleans; Grimm's Märchen; Minna Von Barnhelm; Peter Schlemihl; Wilhelm Tell; Hermann und Dorothea; Harris's German Composition; Freytag's Aus neuer Zeit; Immensee.

Latin. Collar & Daniell's Beginner's Latin Book; Collar's Practical Latin Composition; Daniell's Exercises in Latin Prose Composition; Jones's Latin Prose Composition; Allen & Greenough's Latin Grammar; Allen & Greenough's Cæsar; Allen & Greenough's Cicero; Allen & Greenough's Ovid; Allen & Greenough's Virgil; Chase & Stuart's Cornelius Nepos, and Sallust. For sight reading, Harper's text editions of Cæsar, Cicero, and Virgil.

Greek. White's Beginner's Greek Book; Jones's Greek Prose Composition; Woodruff's Greek Prose Composition; Goodwin's Greek Grammar and Reader; Crosby's Lexicon to the Anabasis; Homeric Lexicon; Liddell & Scott's Lexicon; Johnson's Iliad; Anabasis; Hellenica; Cyropædia.

History. Montgomery's History of England; Creighton's History of Rome; Leighton's History of Rome; Pennell's History of Greece; Oman's History of Greece; Sheldon's Studies in Greek and Roman History; Allen's Short History of the Roman People.

Mathematics. Bradbury's Elementary Algebra; Bradbury and Emery's Academic Algebra; Bradbury's Academic Geometry; Bradbury's Trigonometry and Surveying.

Music. Harmony in Praise; Codas.

Sciences. Harvard Descriptive List of Experiments in Physics; Hall & Bergen's Physics; Gage's Introduction to Physical Science; Hunt's Hygiene.

Miscellaneous. Edward's Mythology; Harvard Examination Papers.

COURSE OF STUDY FOR THE ENGLISH HIGH SCHOOL.

The course of study pursued by the English high school is substantially that ordered by the school committee in 1886 at the time of the division of the Cambridge high school.

The outline here given represents the course in its present state.

First Year.— Class IV.

	Studies.	Months.	Exercises per week.
1	Latin	10	5
2	Commercial Arithmetic and Business Forms	10	5
3	Algebra	10	5
4	History of England	6	3
5	Physiology and Hygiene (after History)	4	3
6	English Composition	10	2
7	American Prose Writers	5	1
8	American Poets	5	1
9	Drawing	10	1

An option is offered between the first two numbers, Latin and arithmetic. The other numbers are prescribed for all.

The prose writers studied are Hawthorne, Irving, Longfellow, Whittier, Holmes, Lowell, Thoreau, and Emerson ; the poets studied are Longfellow, Whittier, Bryant, Holmes, Lowell, and Emerson.

The English of the first year, apart from the literature read, is based on Chittenden's Elements of English Composition, and covers the following branches : Punctuation, capitals, the combination and transformation of elements, the principles of expression, the figures of speech, and exercises in development, reproduction, paraphrasing, composition, and letter-writing.

Second Year.— Class III.

	Studies.	Months.	Exercises per week.
1	Latin	10	5
2	Book-Keeping and the Laws of Business	10	5
3	Geometry	6	5
4	English (after Geometry)	4	5
5	Physics	10	5
6	English Literature	10	1

The option between Latin and commercial subjects is continued, pupils taking number one or number two in accordance with their decision of the preceding year.

The English of the second year, based on Lockwood's Lessons in English, includes the following : A review, in new forms, of the first year's work, a brief history of the English language, its Anglo-Saxon and classical elements, and the more obvious properties of diction.

The works studied in English literature are Hawthorne's Twice-Told Tales, Dickens's Christmas Stories, Scott's Lady of the Lake, and Ivanhoe.

The course in physics includes laboratory work by the pupils, experiments by the teacher, records of observation and inferences, and the usual recitation and examination methods.

Third Year.— Class II.

	Studies.	Months.	Exercises per week.
1	Latin	10	5
2	Preparatory Studies for Scientific Schools	10	5
3	French	10	5
4	German	10	5
5	Chemistry	10	3
6	Botany	10	2
7	English Literature	10	1

Number two may be taken instead of number one (Latin). This alternative is intended for pupils preparing for the Massachusetts Institute of Technology, the Lawrence Scientific School, and the science courses of the several colleges. It includes reviews of algebra and geometry, with advanced work in both, also reviews of arithmetic, and is designed to prepare pupils for their preliminary examinations.

There is also an option between number three (French) and number four (German). Pupils will not be permitted to take both in addition to the other studies that are required unless their previous record indicates that they can do so without detriment to their scholarship or health. Numbers five, six, and seven are required of all. No other options than those authorized by the school committee, and here pointed out, will be permitted.

No provision is made for a commercial course extending beyond the first two years. Pupils who have finished this course, and who desire to continue their studies two years longer and receive a diploma, may do so. As they are not prepared to enter upon number one (Latin) for this year, and may not wish, since they are not candidates for higher institutions, to take number two (the alternative offered for number one), they may, for another alternative, begin Latin with the entering class. They will take for their other studies either number three or number four, and numbers five, six, and seven.

The course in chemistry consists largely in laboratory practice, great importance being attached to skilful manipulation, keen observation, logical reasoning, and the neat, orderly, and accurate recording of work done and results reached. Similar methods, so far as the nature of the subject permits, are followed in the botanical work of the year.

The literature of this year includes Goldsmith's Deserted Village and Traveller, Gray's Elegy in a Country Churchyard, Addison's Sir Roger De Coverley Papers, Dickens's Tale of Two Cities, and Scott's Quentin Durward.

Fourth Year.— Class I.

	Studies.	Months.	Exercises per week.
1	Latin (alternating with number two)	10	2 or 3
2	Ancient and Mediæval History . .	10	3 or 2
3	United States History, English Language, and English Literature . .	10	5
4	Mathematics	10	5
5	French	10	5
6	German	10	5
7	Astronomy	6	3
8	Civics	4	3
9	English	10	5

Numbers three and four are designed for those who do not take numbers one and two. Under the English of number three is included practice in English composition; also (for 1893) the critical reading of Shakespeare's Julius Cæsar and Merchant of Venice, Scott's Lady of the Lake, Arnold's Sohrab and Rustum, the Sir Roger de Coverley Papers in the Spectator, Macaulay's second Essay on the Earl of Chatham, Emerson's American Scholar, Irving's Sketch Book, Scott's Abbot, and Dickens's David Copperfield. Number four includes algebra (quadratic equations and series), trigonometry, and solid geometry.

Numbers three and four are prescribed for the final examinations for admission to the Institute of Technology and the Lawrence Scientific School, and are suitable for candidates for higher scientific courses in general.

The option between number five (French) and number six (German) is continued.

The remaining numbers (seven, eight, nine, and ten) are prescribed for all.

Pupils who desire to enter normal schools are organized into a special class, and guided in such reviews as may be needed to prepare them for admissson.

Special study is given (under number nine) to the works of Shakespeare. The plays usually read are Julius Cæsar, The Merchant of Venice, A Midsummer-Night's Dream, and Twelfth Night. In addition, a survey of the field of English literature is made necessarily brief, and

general, but with an endeavor to note the more prominent writers and productions in their right relations, one to another, and in their proper historical environment.

In addition to the work prescribed in the foregoing course, special individual literature or rhetorical exercises are required at regular intervals of the lower classes, and, so far as practicable, of the upper also. For this work, the pupils of a room are divided into sections.

The pupil's exercise may be a composition, a talk, a recitation, a declamation, a part in a dialogue or a colloquy, a report of some investigation, or visit, or endeavor to get information, the preparation of a class (or section) paper, or anything else in the line of his taste or power, provided always that the proposed exercise shall meet the teacher's approval.

The exercises may be illustrated by maps, photographs, drawings at the board, quotations,—by anything or in any way that will contribute to a better understanding of the subject presented.

While, in general, it is desirable that the exercise shall hold some relation to the authors and literary works that are studied at the time it is prepared, it is intended to leave a generous margin for whatever individuality the pupil may possess.

The pupil's subject should be reported to the teacher two weeks in advance of presentation.

Drawing and music are regarded as important branches of the course of study. The new building with its commodious drawing-room and hall has made it possible to make a beginning in giving these subjects the attention which, because of changes and lack of facilities, they have not for the past few years received.

While the studies of the English high school are selected and arranged with sole reference to the wants of those who are not to enter college, pupils of good capacity need only to supplement these studies by a moderate amount of outside work to gain admission to such colleges as offer courses that do not include Greek. In this way several graduates of the school have entered college and are maintaining an honorable standing there.

Diplomas are awarded to those only who have honorably completed a four years' course of study or its full equivalent.

The number of recitations per day for other pupils than those in the Manual Training school is usually three, but sometimes four.

But little more than one quarter of the school session is left for the preparation of lessons. Failure to do fair work is generally associated with a lack of proper daily application. For the pupil of average capacity who makes the most of his opportunities at school, two hours of home study each school day will doubtless suffice. If the

pupil neglects to study at home, parents may assume that he is not doing at school what he ought. In those rare cases in which faithful pupils are overburdened because of frail health or lack of mental endurance, a a seasonable conference between parents and teachers is desirable.

Cards giving the standing of each pupil will be sent home once in two months for inspection and signature. Scholarship marks are on a scale of 100. A mark above 90 indicates excellent rank; between 80 and 90, good rank; between 70 and 80, fair rank; below 70, poor rank. The fact is recognized, however, that certain elements of a sound scholarly spirit, such as self-reliance, zeal, persistency, conscientiousness, love of truth, cannot adequately be expressed in figures. Those whose marks fall below 60 are reported to the head master for advice, warning, reference to the high school committee, or removal to a lower class. In this connection, attention is called to the following vote of the school committee, passed July 6, 1886:

> Pupils recommended by the committee on examinations and promotions shall be admitted to the Latin school and the English high school in September on trial. Should any of these pupils fail to maintain a suitable rank during the autumn term, that fact shall be reported to the high school committee at the close of said term, and no pupil thus reported shall continue in either school except by a vote of the high school committee.

It is very important that at the beginning the pupil shall thoroughly master principles, and thereby make his later work successful. When this is not done, the recovery of lost grounds is extremely difficult. He is earnestly urged to cultivate from the outset sound habits of work,— such habits as will give him a reputation for promptness, punctuality, order, neatness, system, concentration, thoroughness. Aside from the immediate scholarly results of such habits, they have in their bearing upon the pupil's subsequent life a value that cannot be too highly regarded.

Many of the exercises of the school, like experiments by the teacher, illustrations with the camera, object lessons, much of the laboratory work in science and of the bench work in the shop, are of such a nature that, if the pupil misses them, they cannot be made good to him. Moreover, absence embarrasses the instruction of the class, and thus seriously affects its progress. It is excusable only when it cannot be avoided.

It is presumed that pupils in this school mean to conduct themselves honorably and becomingly,— a presumption justified by the commendable behavior of nearly all. It is the aim of the school to strengthen the sense of propriety, duty, and honor by trusting it. Boys and girls at school are *citizens* as fully as they can ever be (see sect. I., art. XIV., Const. U. S.); it becomes them, therefore, in school and elsewhere, now as throughout their lives, to practice the duties, cultivate the graces, and display the loyalty of good American citizenship. Only in

cases of conspicuous failure in conduct will a deportment record be kept.

It is hoped that parents will note carefully such reports as they may receive, and, if they are unsatisfactory, coöperate with teachers in efforts to secure closer attention to duty.

Text-Books in the English High School.

English Literature. Chittenden's English Composition; Hill's Foundations of Rhetoric; Lockwood's Lessons in English; Strang's Exercises in English; Swett's Elocution; American Poetry; American Prose; Dickens's Christmas Stories and Tale of Two Cities; Gray's Select Poems; The Abbot; Ivanhoe; Quentin Durward; Lady of the Lake; Macaulay's Select Essays; Julius Cæsar; Macbeth; Merchant of Venice; A Midsummer-Night's Dream; Twelfth Night; Paradise Lost; Milton's Lyrics; Sir Roger De Coverley Papers; The Traveller; The Deserted Village; The Princess; Twice-Told Tales; Sohrab and Rustum.

French. Worman's First French Book; Otto's French Grammar; Gasc's French Dictionary; L'Avare; Le Conscrit; Le Siége de Berlin; Peppino; Récits d'Histoire, Part II.; La Belle-Nivernaise; La Chute; Mlle. Solange; L'Abbé Constantin; Mlle. de la Seiglière; Histoire d'un Paysan; Récits de la Vieille France; Le Pacte de Famine; Grandgent's Materials for French Composition.

German. Worman's First German Book; Collar's Eysenbach's German Lessons; Freytag's Aus neuer Zeit; Köhler's German Dictionary; Höher als die Kirche; Grimm's Märchen; Minna Von Barnhelm; Die Jungfrau von Orleans; Immensee; Harris's German Composition.

Latin. Collar & Daniell's Beginner's Latin Book; Allen & Greenough's Latin Grammar; Allen & Greenough's Cæsar; Allen & Greenough's Ovid; Allen & Greenough's Virgil; Chase & Stuart's Cornelius Nepos.

History. Montgomery's History of England; Swinton's Outlines of the World's History.

Mathematics. Bradbury's Elementary Algebra; Bradbury and Emery's Academic Algebra; Bradbury's Academic Geometry; Bradbury's Trigonometry and Surveying; Crittenden's Commercial Arithmetic; Duff's Book-Keeping; Wentworth's Elements of Geometry; Wentworth & Hill's Exercises in Arithmetic.

Music. Codas, published by Ginn & Co.

Sciences. Appleton's School Physics; Gage's Introduction to Physical Science; Hall & Bergen's Physics; Gray's School and Field-Book of Botany; Hunt's Hygiene; Young's Astronomy; Williams's Chemistry.

Miscellaneous. Edward's Mythology; Fiske's Civil Government; Dawes's How We are Governed.

THE MANUAL TRAINING SCHOOL.

The Cambridge Manual Training School for Boys was founded by Mr. Frederick H. Rindge, and is under the immediate control of a committee appointed by him to carry his plans into execution. The organization of the school for 1893-1894 was as follows: —

SUPERVISING COMMITTEE.

William E. Russell, T. Wentworth Higginson,
Samuel L. Montague, Robert Cowen,
Andrew McF. Davis, Edwin B. Hale,
Harry Ellis.

TEACHERS.

Mechanical Work.

Harry Ellis, *Superintendent.*

Allan K. Sweet, Albert L. Ware,
James G. Telfer, Wallace B. Blandin,
Walter M. Smith, Sidney I. B. Stodder,
Frederic B. Scotton, Frederick O. Smith.

Academic Work.

Charles F. Warner, *Master.*

Louisa P. Parker, Mary I. Ellis.

Frederick W. Taylor, M. D., *Physical Examiner and Emergency Lecturer.*
Capt. Walter E. Lombard, *Instructor in Military Drill.*
Lieut. James H. Dillaway, *Instructor in Cutlass Drill.*

Robert C. Harlow, George W. Wells.
Superintendent's Clerks.

Only boys who have been admitted to the English high school will be permitted to elect the manual course of study. The founder desires that they shall be of good health and physique.

Pupils who take this course will give three hours a day to academic work under teachers of the English high school, devoting two hours to recitations and one to study, and three hours a day to mechanical work under teachers of the Manual Training school, devoting two hours to the bench and one to drawing. The provisions for academic work are made by the City of Cambridge through the English high school, and those for the mechanical work are supplied by Mr. Rindge.

No pupil will be permitted to take that part of the course of study assigned to one school without also taking the part assigned to the other.

The course of study is as follows :

First Year.

		Hours per week.	Months per year.
1.	Elementary Algebra	5	10
2.	English History	3	7
3.	Civil Government	3	3
4.	English Language and Literature	2	10
5.	Drawing	5	10
6.	Carpentry, Joinery and Iron Fitting	10	10

The course in algebra includes definitions and notation, addition, subtraction, multiplication and division, factoring, fractions, equations of the first degree with one or more than one unknown quantity, powers and roots, radicals and affected quadratic equations.

The text-book prescribed for the course in English history is Montgomery's "Leading Facts." The topical method of instruction is employed and the boys' note-books contain, besides topics, historical maps, notes of collateral reading, important dates, and various other memory aids. Photographs of persons, places and scenes, guide-books of the Tower of London and Westminster, fac-similes of the Magna Charta, of famous death warrants, and of the earliest newspapers printed, are utilized as helps in this study.

The course in civil government is based upon Miss Dawes's "How we are Governed." The methods used are similar to those employed in the teaching of history.

The instruction in English follows the plan of Chittenden's "Elements of English Composition." Frequent themes are required. The Literature studied is selected from the leading American authors and includes both prose and poetry.

The course in drawing includes : use of T-square, triangles, scale, pencil and compass, mechanical alphabet and its applications, geometrical constructions, projections, prisms, cylinders, etc., dimensioning, intersections and developments, and tests.

The course in carpentry and joinery is as follows:— Saw and chisel exercises, halved joints, blind mortise and tenon joints, open mortise and tenon joints, halved dove-tailed joints, dove-tailed joints, brace joints, boring exercises, dowel joints, table leg and rail, glued triangle having angles of 30, 60 and 90 degrees, model of a newel post, tool chest, shoe blacking stand, etc.

The tools used are :— Rip, cross-cut, back and key-hole saws ; block, jack, rabbet planes and jointer ; try-square, chisels, gouges, bit-stock, bits, bevel marking gauge, hammer, nail set, mallet, screw-driver, counter sink, brad awl, spoke shave, clamps, wood files, drawing knife, mitre box, oil stone, and grind stone.

The course in iron fitting is as follows:— Chipping, filing, scraping, polishing, fitting of sliding parts, drilling, hand turning, bolt cutting, tapping, etc.

The tools used are :— Hardened steel try square, outside spring calipers, spring dividers, steel scratch awl, prick punch, centre punch, file card, brass vise jaws, ball-peen hammer, cape chisel, flat chisel and various forms and sizes of files.

Second Year.

	Hours per week.	Months per year.
1. Geometry	3	10
2. Physics	5	10
3. English Language and Literature	2	10
4. Drawing	5	10
5. Pattern Making, Blacksmithing and Casting	19	10

The instruction in geometry follows closely the plan of the first three books of Bradbury's "Academic Plane Geometry," i. e., through the geometry of the circle. Very little is required in books IV. and V. because the ground is covered by the practice in mechanical drawing. The aim of the course is to cultivate the power of close and accurate reasoning, by a careful study of model demonstrations. As much original work is required as seems consistent with a satisfactory study of the formal demonstrations outlined in this course.

The course in physics aims to cover all the principal topics in a manner consistent with elementary treatment. An effort is made to avoid the fragmentary view of the subject which would be incident to a purely experimental course of one year, and at the same time to retain the advantages of laboratory methods. The method of instruction combines quantitative laboratory exercises of which carefully prepared reports are required, with lecture-table demonstrations by the teacher. There are

frequent text-book lessons and the necessary recitations and examinations.

The second year's work in English is based upon "Lockwood's Lessons in English." This course embraces an outline of the history of the English language and the elementary principles of rhetoric. Compositions form a part of nearly every lesson. The authors studied are Scott, Dickens and Hawthorne.

The work in drawing includes :—Inking with ruling pen and compass pen, shade lines, the standard bolt with formulas, machine drawing, dimensioning and specifying, freehand outline drawing, mechanical perspective, freehand perspective from models, freehand machine drawing, dimensioned constructions, intersection and development of plane surface solids requiring cutting planes, oblique projections and tests. All sheets are executed in ink except those for freehand and mechanical perspective.

The course in wood turning is preparatory to pattern making and consists of exercises in measuring with calipers and dividers, and in cylindrical, compound, conical, globe chuck and face plate turning.

The tools used are :—Wood turning lathe, inside calipers, outside calipers, dividers, gouges, chisels, cutting-off tool, round nose and diamond point tools, oil stone and oiler.

The pattern making work consists of instruction concerning moulding, draft of patterns, use of shrink rule, core prints, and core boxes ; followed by exercises in laying out patterns, building up cone patterns, jig sawing, and all operations involved in making both solid and split patterns.

The course in forging and blacksmithing is as follows :—Exercises in care of fire and in drawing, upsetting, bending, riveting, welding, punching, and tempering. Some of the articles made are : — The wedge, square point, sign dogs, stone dogs, S hooks, bent welded rings, harness hooks, truck hangers, hooks and staples, swivels, shafting keys, shaft with shoulders, bent angle irons for strengthening joints, welded angle irons, chain links, eye bolts and ring, clevice with bolt and cotter, bolts and nuts, square and hexagonal lathe tools, tempered spring, flat drill, hammer, blacksmith tongs, etc.

The tools used are a portable forge, anvil, hand hammer, rule, square swedges, fullers, hot chisel, cold chisel, set hammer, hardy square, outside spring calipers, heading tools, and various tools used in caring for the forge fire.

Third Year.

		Hours per week.	Months per year.
1.	Advanced Algebra,	5	6
	Plane Geometry,	5	4
2.	Physics,	2	10
	Chemistry,	3	10
3.	French,	5	10
4.	English Language and Literature,	3	10
5.	Drawing, (alternate days)	10	5
6.	Machine Shop Work, (alternate days	10	5

An option is offered between Nos. 1 and 2.

The mathematical work of this year is designed to meet the admission requirements of the Massachusetts Institute of Technolgy (pp. 58 and 59, Catalogue of 1892-3) which includes all the topics of academic algebra, to geometrical progressions, and the first five books of plane geometry. The text-books used are Bradbury & Emery's Academic Algebra and Wentworth's Elements of Plane Geometry.

The advanced course in physics assumes a knowledge of the elements of the subject in general and such skill in manipulation as may be acquired in the elementary course of the previous year. Special attention is given to the C. G. S. system of units. The course is mainly experimental and includes measurements in the metric units of length, mass, and volume; investigation of such laws as those governing the elasticity of wooden rods under flexure or torsion; the determination of such values as the breaking strength of wire, the coefficient of expansion of metals, the latent heat of water and steam, specific heat of lead, and the electrical resistance of wires both by substitution and by the bridge method. The advance is in the line of more accurate methods of experimenting rather than in new subjects.

The course in French covers Otto's French Grammar, Part 1, and the translation of Worman's Premier Livre, Peppino, Les Récits de la Vieille France, Le Pacte de Famine, and Le Siége de Berlin. There is much translation of English into French either orally or at sight, or in the form of written exercises prepared during the study period, or in class under the supervision of the teacher.

The English of this year includes daily themes and the reading of selections from standard authors.

The course in chemistry consists of 40 laboratory exercises and 80 recitations or lectures. The experimental work includes 50 of the 100 experiments prescribed by the Committee of Ten. The topics are:— Oxygen, nitrogen, hydrogen, carbon, acids, bases, salts, oxides of nitrogen, oxides of carbon, chlorine, bromine, iodine, sulphur, phosphorus, arsenic, silicon, glass, atmosphere, water, flame, calcium, magnesium, aluminum, zinc, lead, tin, mercury, silver, iron, illuminating

gas, alcohol, bread, soap, Dalton's laws, Gay Lussac's and Avogadro's law with problems.

The course in drawing is as follows:—Projections; measurements of inclined lines with applications; geometrical constructions such as mathematical curves, the helix with applications to screws, theory of conic sections, intersection and development of solids bounded by curved surfaces requiring the cutting plane; theory and execution of the spur gears; machine drawing (detail and assembled), specified and dimensioned for use.

Each student is treated as an assistant draughtsman in a large office. A complete machine is selected and each assistant draughtsman is given an idea of some part which he must develop, and of which he must produce a correct working drawing. At least two parts are thus treated, and each student makes two or more tracings of sheets not his own. From these he makes blue prints on paper prepared by the class. The total time in the drawing office is about seventy hours.

The machine shop course for both third and fourth year consists of lathe work, including the preparation of work for the lathe, straight and taper turning, boring, chuck drilling, reaming, screw cutting, uses of boring bar, compound rest, taper attachment and fine measuring tools, planing on planer and shaper, milling, drilling, and boring in drill press, forming and grinding cutting tools, construction and assembling of machines and the use of special tools.

The tools used are those of the first year and also the engine lathe, planer, shaper, milling machine, upright drill, sensitive drill, emery grinder, drills, reamers, arbors, taps, lathe dogs, and tools of every variety needed to complete a given piece of work.

Throughout the entire course the pupils in each shop work from prepared blue prints giving details and specifications of the work or from drawings specially prepared by themselves.

Fourth Year.

	Hours per week.	Months per year.
1. Solid Geometry and Reviews in Mathematics,	5	10
2. Chemistry or Botany,	5	10
3. English Language and Literature and U. S. History,	3	10
4. French,	5	10
5. Drawing, (alternate days)	10	5
6. Machine Shop Work, (alternate days)	10	5

An option is offered between Nos. 1 and 2.

The work of the class in advanced mathematics has been divided between advanced algebra and trigonometry, three days of each week having been given to algebra and two to trigonometry during the fall and winter terms. The latter months of this year are spent in the necessary

reviews in mathematics for the entrance examinations of the Lawrence Scientific School and the Massachusetts Institute of Technology. Trigonometry has been taught because it is required for admission to the Lawrence Scientific School. Inasmuch as an option is offered, for the present, between advanced algebra and solid geometry by the Massachusetts Institute of Technology and time has not been found for both subjects, the emphasis has been placed upon advanced algebra. But both subjects are likely to be required in the near future and provision will then be made for complete preparation in both. It is intended to make a beginning in solid geometry this year, taking possibly one book or about thirty theorems.

The work in English and history for the advanced class follows the entrance requirements of the Institute of Technology and the Lawrence Scientific School. In English the books agreed upon by the colleges are read, and much written work is required. In history the class follows Johnston's "United States," but this book furnishes only a small part of the work done. From topics assigned with references to larger historical works a thorough study is made of the more important phases of American history; essays are written upon the lives of our great statesmen and different historical movements; and something is attempted in the way of individual and voluntary study of some epoch or event. The English history required for entrance to the Lawrence Scientific School, will receive some portion of the time devoted in this course to history.

The drawing in the regular course consists of machine mechanism, belting principles; bevel gears (elective), worm gears (rack and pinion elective), assembling a machine from details (elective), projection and cast shadows; isometric projection and shadows; use of color washes and tints.

The student may, if he desires, substitute the following for the drawing marked "elective,"—architectural details, as sections through a building, window casings, inside and outside finish and decorations, etc., and the plans and elevations of at least two houses.

For the Institute section the course is at follows: — Orthographic projections and shadows with color washes and tints, isometric projection, simple and complicated shadows, isometric intersections, etc., and descriptive geometry.

For machine shop work see the paragraphs at the end of third year.

A series of physical exercises is also maintained throughout the four years, including military drill in the school of the soldier, without arms, under Capt. Lombard, the cutlass drill under Lieut. Dillaway, and fire and emergency drill under the immediate direction of Superintendent Ellis.

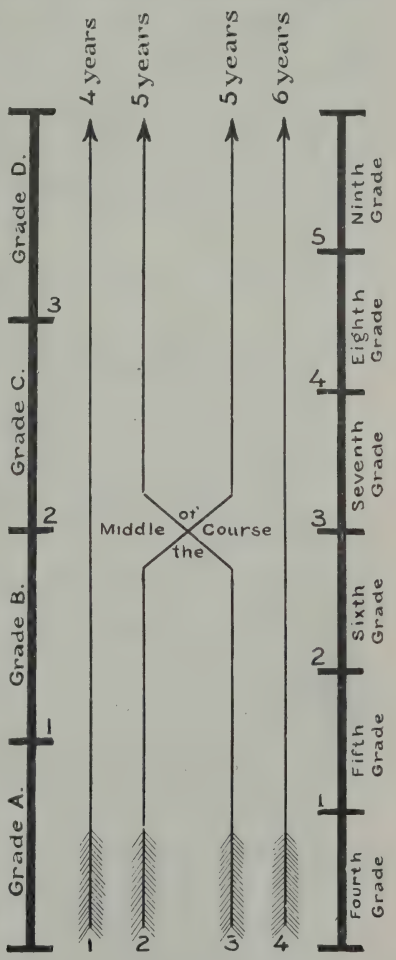
Emergency lectures by a competent surgeon form a part of the work of the first year. The text-book used is Morton's Handbook of First Aid to the Injured.

COURSE OF STUDY FOR THE CAMBRIDGE GRAMMAR SCHOOLS.

The course of study is divided in two ways: (1) into six sections; (2) into four sections; each section covering a year's work. Pupils pursuing the six years' course are classified in six grades, called the fourth, fifth, sixth, seventh, eighth, and ninth grades. Those pursuing the four years' course are classified in four grades, called grades A, B, C, and D. When pupils are promoted to the grammar schools they will begin the first year's work together. After two or three months they will be separated into two divisions, but they will remain in the same room under the same teacher.

One division will advance more rapidly than the other, and during the year will complete one-fourth of the whole course of study. The other division will complete one-sixth of the course.

During the second year the pupils in grade B should be in the same room with the sixth grade. At the beginning of the year they will be five months (one-half the school



Arrow No. 1 indicates the 4 years' course; grades A, B, C, D. Arrow No. 2 indicates one of the 5 years' courses; grades A, B, 7, 8, 9. Arrow No. 3 indicates the other 5 years' course; grades 4, 5, 6, C, D. Arrow No. 4 indicates the 6 years' course; grades 4, 5, 6, 7, 8, 9.

year) behind those in the sixth grade. After two or three months grade B will be able to recite with the sixth grade, and at the end of the year both divisions will have completed one-half the course of study — the one in two years and the other in three years. The plan for the last half of the course is the same as for the first half, the grades being known as C and D in the four years' course, and as the seventh, eighth and ninth in the six years' course.

There are also two ways of completing the course in five years: (1) any pupil in the four years' course may at the end of two years be transferred to the seventh grade, and finish the course in three years; (2) any pupil in the six years' course may at the end of three years be transferred to grade C, and finish the course in two years. In both cases these changes can be made without omitting or repeating any part of the course.

READING.

Fourth Grade. Fables and Folk Stories, Hans Andersen's Stories, and one or more of the authorized Readers. Selections of poetry and prose (minimum number of lines, 100) are to be committed to memory and recited, not in concert only, but by each pupil; also to be written frequently from memory.

Additional for Grade A. Robinson Crusoe, Ruskin's King of the Golden River, and selections from the authorized Readers of the fifth grade.

Fifth Grade. Robinson Crusoe, Ruskin's King of the Golden River, and one or more of the authorized Readers. Selections of poetry and prose (minimum number of lines, 150) are to be committed to memory and recited, not in concert only, but by each pupil; also to be written frequently from memory.

Sixth Grade. Hawthorne's Little Daffydowndilly and Biographical Stories, Longfellow's The Children's Hour, and one or more of the authorized Readers. Selections of poetry and prose (minimum number of lines, 200) are to be committed to memory and recited, not in concert only, but by each pupil; also to be written frequently from memory.

Seventh Grade. Hawthorne's Wonder Book, Eggleston's First Book in American History, and selections from the authorized Readers. Selections of poetry and prose (minimum number of lines, 200) are to be committed to memory and recited, not in concert only, but by each pupil; also to be written frequently from memory.

Additional for Grade C. Burrough's Birds and Bees, Haw-

thorne's Grandfather's Chair and Tanglewood Tales. The last two books may be read at home, the pupils being required to give an account of them, both oral and written, at school.

Eighth Grade. Burrough's Birds and Bees, Hawthorne's Grandfather's Chair and Tanglewood Tales. Selections of poetry and prose (minimum number of lines, 200) are to be committed to memory and recited, not in concert only, but by each pupil; also to be written frequently from memory.

Ninth Grade. Masterpieces of American Literature. Selections of poetry and prose (minimum number of lines, 200) are to be committed to memory and recited, not in concert only, but by each pupil; also to be written frequently from memory.

Additional Books. Additional books for each class may be obtained under the following order of the committee, adopted May 19, 1887: "Standard books of English literature may be used in each class of the grammar schools, the choice of books to be made by the master of the school, subject to the approval of the school committee."

Remarks. All the classes should have frequent exercises for the purpose of training the voice.

It is expected that every pupil will read at home each term one or more books recommended by the teacher.

SPELLING.

Fourth Grade. Harrington's Spelling-Book, Part First to page 60.

Grade A. Harrington's Spelling-Book, Part First.

Fifth Grade. Harrington's Spelling-Book, Part First, and Part Second to page 25.

Sixth Grade. Harrington's Spelling-Book, Part Second to page 61, and page 91.

Seventh Grade. Harrington's Spelling-Book, Part Second.

Remarks. The pupils in each room should be taught to write the names of one another, the name of their teacher, the name of their school, the names of the streets and of the trees in the vicinity of their school, and of the shrubs and flowers in their gardens.

The spelling of the names of cities, states, countries, rivers, mountains, etc., and of technical words, should be taught in connection with the subjects in which they are used.

The pupils of the sixth, seventh, eighth, and ninth grades should have constant practice in finding the pronunciation and meaning of words from the dictionary.

LANGUAGE.

Fourth Grade. Such lessons in Part II. of Hyde's Practical Lessons in the Use of English as shall be especially helpful in teaching pupils to express their thoughts correctly.

Additional for Grade A. A short composition each week which may be prepared at home.

Fifth Grade. Such lessons in the first half of Southworth and Goddard's First Lessons in Language as shall be especially helpful in teaching pupils to express their thoughts correctly. Give special attention to letter writing.

Sixth Grade. Such lessons in Southworth and Goddard's First Lessons in Language as shall tend to awaken and stimulate thought, and be helpful in teaching pupils to write fluently and correctly.

Seventh Grade. Parts I. and II. of Tweed's Grammar for Common Schools; also such portions of Hyde's Practical Lessons in the Use of English, or of Metcalf's Language Exercises as may be helpful in teaching the required subjects in Tweed's Grammar, and especially such portions as will be helpful in teaching pupils to understand and write good English. Continue letter writing, make out bills, and write frequently short compositions on familiar subjects.

Additional for Grade C. A short composition each week which may be prepared at home.

Eighth Grade. Parts III. and IV. of Tweed's Grammar for Common Schools; also such portions of Hyde's Practical Lessons in the Use of English, or of Metcalf's Language Exercises, as may be helpful in teaching the required subjects in Tweed's Grammar, and especially such portions as will be helpful in teaching pupils to understand and write good English. Continue the written work of the seventh grade.

Ninth Grade. Tweed's Grammar for Common Schools; Masterpieces of American Literature. Continue the written work of the seventh and eighth grades.

Remarks. Too much time is often given to what may be called the mechanical part of language work. The use of capitals and punctuation marks, and even spelling can be taught equally well, if not better, in connection with what pupils write in giving expression to their thoughts. It should be the aim of teachers to awaken and stimulate thought on the part of their pupils and guide them in giving expression to it. Every lesson should become a language lesson, and drawing as well as the written and spoken word should be used as means of expression.

GEOGRAPHY.

Fourth and Fifth Grades. The topics for these grades will be printed from month to month, the plan being that each teacher prepare each month an outline of work for the following month, and that a committee of the teachers with the superintendent select from these outlines, after making such additions and changes as seem advisable, the topics to be printed.

Additional for Grade A. Topics for the fifth grade marked *a*.

Sixth Grade. The prominent physical features of North and South America, and the physical and political geography of the countries of North America.

Seventh Grade. The prominent physical features of Europe, Asia, Africa, and Australia, and the physical and political geography of the countries of South America and Europe.

Additional for Grade C. The physical and political geography of the countries of Asia, Africa, and Australia.

Eighth Grade. The physical and political geography of the countries of Asia, Africa, and Australia, and a general review of the work of the sixth and seventh grades.

REMARKS. Pupils should be made familiar with geographical terms and definitions as their use is required. At least one-half of the comparatively unimportant parts of the text-book should be omitted.

The following outline for the fourth and fifth grades was prepared by William Morris Davis, professor of physical geography in Harvard University, for the use of the teachers attending his lectures during the school year 1892-93. Teachers of all the grades will find it profitable to study this outline.

INTRODUCTION.

It is intended that some account of all the subjects introduced by the terms here following should be presented by the teacher before the terms themselves are employed. As far as possible, every subject should be first illustrated by home examples, pictures, models, globes or otherwise; after such illustration, it should be talked about until it becomes a familiar mental conception; then the geographical term by which it is named may be mentioned. When the term has been familiarly employed in several lessons, it should be defined by the scholars,

and the definition thus secured should be written down. The definition of the term as given in various text-books may then be consulted in grade V.

It is desirable that a series of somewhat systematic observations of home geography, the seasons, the weather, the sun, moon, constellations, etc., should be undertaken by the scholars; the results should be entered with their dates in a class record-book, to be kept by the teacher, and referred to when necessary for citation of observations. When facts thus learned become familiar, their statement in text-books may be compared with that written by the class from study of observations in the record-book.

The following numbered divisions are intended simply for convenience in separating various parts of the subject; they need not correspond to lesson-headings; although it is desirable that each lesson should present a definite, well-rounded subject or group of subjects. Subjects printed in italics are intended for grade V.; non-italicized subjects should be introduced into the lessons of grade V. as far as needed for good understanding. After the current year, it is desired that grade V. should advance somewhat further than is here indicated, on the basis of work during the current year in grade IV. General description and narration should characterize the teaching in grade IV.; more definite description and location should distinguish the work in grade V.

OUTLINE.

1. General notions of direction and distance over land and water, beginning at home and going abroad. Maps of Cambridge and of the vicinity of Boston. Compass; fifty-foot measure. What would be found in going moderate distances north, northeast, east, etc.; towns, ponds, streams, and so on. *Arithmetical illustrations of distance, by walking, driving, trains, ships, etc.*
2. General notions of different kinds of land surface, in order to gain a basis for illustration further on. Land and water; large and small areas, high and low, barren, forest or field, hot and cold, wet and dry. Narrative, without explanation of causes, in grade IV.; *distribution and something of explanation, (partly as review of grade IV.), in grade V.*
3. Earth as a globe (sphere). So large that all that can be seen of it at once looks flat. Proofs of spherical form: ships at sea; circumnavigation; *shadow on moon.* Size: *Arithmetical illustrations. Attraction: up and down mean from and towards the centre of the earth.* Earth may be illustrated by a small globe.
4. Application of the facts learned under 2 to the earth as a globe. Land and water. Oceans, continuous, large area; continents more or less separated, smaller area. General inspection of globe. *Description and location of oceans and continents from globe (not from map).*

5. Sunshine. Size, distance, heat of sun: *arithmetical illustrations.* Sun shining in all directions like a red-hot ball. Earth gets little of entire sunshine. *Dependence of all plants and animals on this small part of sunshine. Moon and other planets, also spherical bodies like earth, larger and smaller, farther from and nearer to sun. Stars, like other suns; distance; illustrations by various rapid motions.* Earth alone in empty space.
6. Earth turns around. Axis: North Star. *Apparent diurnal motions of sun, moon, and stars.* North and south; east and west; day and night; work and rest. *Measures of time, hours, weeks. Month.* Equator and poles: hot and cold. *Latitude and longitude.*
7. Earth moves round sun. Orbit. Seasons: *altitude of sun in different parts of the earth; length of day and night; opposite conditions in opposite hemispheres.* Year. *Constellations visible at different times of year.*
8. Location of Cambridge and other places on the earth. *Latitude and longitude.* Their seasons; industries as affected by position, seasons, etc. School and vacation. Review of subjects thus far learned, in their local applications.
9. Land and water. Oceans: level, broad, deep, salt; calm, stormy; *even bottom; cold below* 3000 *feet; temperature variable with latitude near surface. Currents, as eddies in the several oceans; drifts and streams.* Sailing vessels: free roadway and motive power; steamers. Continuity of oceans. Islands in mid-ocean. Marine animals.
10. Continents. Review of continental forms on globe. Illustration of continents on hemisphere and special maps. Drawing outline maps. Land surface rising a little above the broad and shallow depression occupied by the oceans. Uneven surface; hills; mountains; volcanoes; highlands; valleys; streams; *absolute and relative relief.* Land animals. As under section 2, much general description and narrative here for grade IV.; the same with more special examples, more definite locations, and more advanced map-drawing for grade V.
11. Coast lines, where water lies on land. Even and ragged coasts. Gulfs, bays, harbors, beaches, bars, cliffs, promontories, capes, isthmuses, peninsulas, islands near shore. *Changes of relative level determining coast line; work of waves in making cliffs, beaches, and bars. Tides.*
12. Atmosphere. Air surrounding earth; rising over highest mountains. Burning, breathing, speaking, flying. Winds: carrying seeds, turning mills, moving sails. Heat and cold. Zones. Clouds, rain and snow, dew and frost. Wet and dry regions. Thermometer, wind vane, rain guage. Weather maps, *weather prediction and climate.* Review of the earth's relation to the sun; rotation; revolution.

13. Rivers. Rain and snow; springs; streams; hills and mountains; slopes and valleys. Divides, drainage. Rivers and river branches, head, mouth. Lakes and waterfalls. *River steamboats and rafts; Mississippi. Factories; Merrimac. Ice. Washing and creeping of soil (rock waste) down hill to streams and rivers; washing along in channel; erosion of valleys; flood-plains; deltas.*
14. Habitation. Villages, cities; ports, falls, fords. Trails, roads, railroads, canals. Population, dense and sparse. *Commerce, colonies.* Products: subsistence; farming, milling, packing, fishing; industries; mines, forests, factories.
15. Races and Countries. Introduction to political geography. People of our own kind, in this country and Europe; *relation of colonies and mother countries.* Negroes, brought from Africa. Indians, original inhabitants, disappearing. Chinese, in this country, as laborers; their vast numbers in China. Tribes, nations; savage, barbarous, half-civilized, and civilized. *Countries or states. Government: republics or confederations; kingdoms; empires. Boundaries: natural and artificial; changed by war, treaty, or purchase. Modern methods of arbitration. Examples of these various subjects to be given, but without attempting completeness.*

ARITHMETIC.

Fourth Grade. Addition, subtraction, multiplication, and division of whole numbers and of decimals, using no whole number of more than five figures, no divisor of more than three, and no decimal beyond thousandths. In the division of decimals the divisor is to be a whole number. Addition and subtraction of like fractions, and of fractions whose common denominator does not exceed twelve.

Teach the tables of United States Money, Liquid Measure, and Dry Measure, with practical examples in changing numbers of one denomination to the next higher or lower.

Additional for Grade A. Avoirdupois Weight, multiplication and division of fractions, including mixed numbers, also the greatest common factor and the least common multiple of two and three numbers, each less than 100, and cancellation.

Fifth Grade. Addition, subtraction, multiplication, and division of whole numbers, of decimals, and of common fractions, including mixed numbers; also the greatest common factor and the least common multiple of two and three numbers, each less than 100, and cancellation. No decimal to extend beyond thousandths, no fraction to have a denominator greater than twelve, and no example to contain more than three fractions. In the division of decimals the divisor is to be a whole number.

Teach the table of Avoirdupois Weight, a part of the tables of Long Measure, Square Measure, Cubic Measure (inches, feet,

yards), and Time Measure (seconds, minutes, hours, days, weeks), with practical examples in changing numbers of one denomination to the next higher or lower. Percentage with simple practical examples.

Sixth Grade. Common Fractions and Decimal Fractions. Teach the tables of Long Measure, Square Measure, Cubic Measure (inches, feet, yards), Avoirdupois Weight, Liquid Measure, Dry Measure, Time Measure (seconds, minutes, hours, days, weeks), and Miscellaneous Measures, with practical examples in changing a compound number to a simple number of a lower denomination, and a simple number to a compound number of higher denomination. Simple Interest at 6 per cent.

Grade B. During the first part of the year grade B will complete the work of the fifth grade.

Seventh Grade. Compound Numbers, including the mensuration of rectangular surfaces and solids; Percentage; Profit and Loss; Commission and Brokerage; Insurance; Taxes; Simple Interest. *Additional for Grade C.* Partial Payments; Problems in Interest; Bank Discount; Commercial Discount.

Eighth Grade. Partial Payments; Problems in Interest; Bank Discount; Commercial Discount; Compound Interest; Bonds; Ratio and Proportion.

Ninth Grade. Partnership; Involution; Evolution; Square Root; Metric System; Book-keeping, confined to simple personal and business accounts.

Grade D. During the first part of the year grade D will complete the work of the eighth grade.

Remarks. In teaching these subjects the examples should be of a simple, practical character. Save time by using small numbers. Many of the examples should be made by the pupils. Those in the text-books are to be used according to the judgment of the teacher. Methods of doing work are more important than the amount of work done. A single example carefully performed, with the reasons for every operation given, either orally or in writing, will do more for the advancement of the pupil than the working of many examples without explanation.

GEOMETRY.

This outline was prepared by Professor Paul H. Hanus, of Harvard University, for the use of the teachers attending his lectures during the school year 1892–93.

To the Teachers:

Geometry has been introduced into the curriculum of the grammar school because of its educational value—because it yields a peculiar and important kind of knowledge, and a highly desirable mental discipline.

To realize this educational value, teachers are reminded of the following principles :—

1. Early instruction in geometry should be object teaching.

2. The pupil should make and keep an accurate record of his observations, and of the definitions or propositions which his examination of the object or objects has developed.

3. In all his work the pupil should be taught to express himself by drawing, by construction, and in words as fully and as accurately as possible. The language finally accepted by the teacher should be the language of the science, and not a temporary phraseology to be set aside later.

4. The pupil is to convince himself of geometrical truths primarily through measurement, drawing, construction, and superposition, not by a logical demonstration. But gradually (especially during the last year of the work), the pupil should be led to attempt the general demonstration of all the simpler propositions.

5. The subject should be developed by the combined effort of teacher and pupil, i. e., the teacher and the pupil are to coöperate in reconstructing the subject for themselves. This is best accomplished by skillful questioning, *without the use of a text-book containing the definitions, solutions, and demonstrations.* The teacher should have a definite outline which may be in the hands of the pupils, but definitions, solutions, constructions, and demonstrations should be wrought out and preserved by the pupils with the teacher's assistance. (It is assumed, of course, that the teacher has many books at hand for personal inspiration, and that he will find in them many exercises which he will adapt to the needs of his classes.)

6. The subject matter of each lesson should be considered in its relation to life, i. e., the actual occurrence in nature and in the structures or machines made by man of the geometrical forms studied; and the application of the propositions to the ordinary affairs of life should be the basis and the outcome of every exercise. In other words the pupil should not only acquire knowledge and skill, but he should learn to apply them. To this end many exercises for practice are necessary, and field work and excursions to shops and factories are well nigh indispensable.

7. Accuracy and neatness are absolutely essential in all the work done by the pupils.

Apparatus. Each pupil needs a pencil, a note-book (letter size), divided scale, compasses and protractor. The school should have a chain or steel tape for measuring distances in the field, a yard measure and a meter measure for measuring lengths indoors, and all the other appara-

tus needed for the outlines which follow. Each school system or district should also have a surveyor's compass for measuring angles in the field. A very simple goniometer could be made by skilful pupils by mounting on a tripod a circular graduated board about a foot in diameter, having a movable arm turning on a pivot at the centre of the board. By sighting along this movable arm the direction of a given line is determined, then after moving the arm until the line of sight falls in the other side of the angle to be measured, this angle can, of course, be read off on the graduated circular board.

GRADE C AND THE EIGHTH GRADE.

INTRODUCTION.

1. What we study in Geometry. (*The form and size of bodies and of their boundaries and edges.*)

2. *Space.* Bounded portion of space is a geometrical body. A geometrical body has only two properties, viz.: *shape* or *form*, and *size* or *magnitude*. Dimensions of a body. Cube, Prism, Pyramid, Cylinder, Sphere. Occurrence of each in nature and in the structures made by man. Geometrical bodies are called solids.

3. *Surfaces. Boundaries of solids.* 1. Plane or flat. 2. Curved. Dimensions of a surface.

4. *Lines.* 1. Edges of solids. 2. Boundaries of surfaces. 3. Intersections of surfaces. Lines are straight or curved. Dimensions of a line.

5. *Points.* 1. Corners of solids. 2. Ends of lines. 3. Intersections of lines. 4. Designate a place. Representation to the eye of point, line, and surface.

PART I. PLANE GEOMETRY.

We shall now take these surfaces, lines, and points away from the solids to which they belong, put them into or on a single plane, and study their properties without considering the solids from which they were obtained.

Pencil point marks a point on paper. Moving point traces a line. Line moving not in direction of its length traces surface.

I. Lines.

Kinds of lines. 1. Straight; test of straightness. 2. Curved. 3. Broken. 4. Mixed or composite. Drawing and reading a line. Two points determine the position of a line.

A. Straight Lines.

1. *Shortest distance between two points. How many straight lines can be drawn between two points?*

2. *Directions of a straight line* (vertical, horizontal, oblique).

3. *Position of straight lines with respect to each other.* 1. Same direction. 2. *Parallel lines* also said to have the same direction. Through a given point to draw a line parallel to a given line (with triangle and ruler). 3. Lines having different directions.

B. Curved Lines.

Recall definition of curved line. Commonest curve is *circumference of circle.* Occurrence in nature and in structures made by man. How to draw circle. *Centre, Radius, Diameter, Arc, Chord, Tangent. Concentric Circles. Tangent and Intersecting Circles.*

Relation of diameter to circumference (to be determined empirically). Pupils measure both the diameter and the circumference in each case, and are led to see that circumference is approximately 3.14 times diameter.

To bisect a straight line.

To divide a straight line into any number of equal parts.

Measurement of straight lines. Units of length. Description and use of surveyor's chain and tape.

Drawing of measured lines. Drawing to scale. Scale of reduction. Reducing factor.

II. Angles.

1. *Definition. Terms needed. Reading an angle.*

2. *Magnitude and kinds. A degree.*

3. *The protractor* and its uses — to measure angles; to lay off angles.

4. *Equal angles.* Construction of an angle equal to a given angle. Sum and difference of angles.

5. *Groups of angles.* (*a*) About a common vertex — 1, adjacent; 2, supplementary adjacent; 3, sum of all the angles about a point. (*b*) Opposite angles. (*c*) Angles made by transversal and parallels — 1, exterior-interior; 2, alternate-interior; 3, sum of interior non-adjacent. Applications.

III. Rectilinear Figures.

A. Triangles.

1. *Occurrence. Definition. Terms used* (sides, base, altitude, vertex).

2. *a. Kinds* (scalene, isosceles, equilateral, equiangular, acute, obtuse, right). *b.* Sum of two sides compared with third side.

3. *Important properties.*

a. Sum of angles of a triangle. Corollaries. (What is a corollary?) Exterior angle.

b. Triangles (or other figures) may be *equal* or *equivalent* or *similar.*

c. Equal triangles; 1, if *two sides and included angle* of one triangle; or, 2, if *a side and two angles* of one triangle; or, 3, if *the three sides* of one triangle are equal to the three sides of another triangle. Applications in each case.

d. Angles at the base of an isosceles triangle. Corollaries.

e. Converse of last proposition. (What is a proposition?)

f. Position of vertex of isosceles triangle with respect to middle point of the base.

g. Two isosceles triangles having a common base. Constructions — 1. To bisect a given line. 2. To bisect a given angle. 3. From a given point to let fall a perpendicular upon a given line.

h. Relation of sides to opposite angles in any triangle, and conversely.

i. Only one perpendicular can be drawn from a point to a line. The perpendicular is the shortest distance from a point to a line, and measures that distance.

NINTH GRADE.

B. Quadrilaterals and other Polygons, and their most important Properties.

1. *Occurrence and kinds of quadrilaterals. Terms used.*

2. *Important properties common to all parallelograms.*

a. Sum of any two consecutive angles.

b. Diagonal divides parallelograms into two equal triangles.

c. Opposite sides are equal.

d. Opposite angles are equal.

e. Diagonals bisect each other.

If the opposite sides of a quadrilateral are equal, the figure is a parallelogram.

3. *The Trapezoid.*

a. Construct trapezoids of different shapes.

b. Sum of two angles adjacent to a non-parallel side.

c. In isosceles trapezoid angles adjacent to same parallel.

d. Diagonal divides trapezoid into two unequal triangles.

e. Median line; one-half the sum of bases.

4. *Polygons.*

a. In general. Regular polygon. Diagonals: Number of different diagonals.

b. Sum of interior angles of a polygon.

c. Centre of regular polygon. Angle at centre.

d. Construction of regular polygons.

1. Using protractor and angle of polygon.
2. Using angle at centre.
3. Without protractor—consider only regular hexagon.

C. Areas.

1. Units of area.
2. How to find the area of (*a*) a square; (*b*) a rectangle; (*c*) a parallelogram.
3. How to find the area of a triangle.
4. Comparison of different triangles having equal bases and equal altitudes.
5. How to find the area of a trapezoid.
6. How to find the area of any polygon.
7. How to find the area of a regular polygon.
8. Two simple exercises in the subdivision of areas. *a*. To divide a triangle into five (any number of) equivalent parts by lines drawn from the vertex.

b. To divide a parallelogram into five (any number of) equivalent parts by lines drawn parallel to one side.

D. The Pythagorean Proposition.

1. In the case of the isosceles right triangle.
2. In the case of the scalene right triangle whose sides are to each other as 3 to 4.
3. In general.
4. Applications.

E. Similar Figures, more especially Similar Triangles.

1. By comparing two similar figures show that—(*a*) Similar figures have the same number of sides. (*b*) In two similar figures each angle of one has a corresponding equal angle in the other. (*c*) In two similar figures corresponding (homologous) sides have a constant ratio.
2. Two triangles are similar if two angles of one are equal to two angles of the other.
3. The areas of two similar triangles have the same ratio (are to each other) as the squares of their homologous sides.
4. Applications to finding heights and distances.

IV. Curvilinear Figures.

A. The Circle.

1. Definitions. (*a*) Review properties already considered. (*b*) Angle at centre and inscribed angle: Sector; Quadrant; Segment.
2. The situation of the centre of a circle with respect to the perpen-

dicular to a chord at its middle point. (*a*) To find the centre of a circle or arc. (*b*) To draw a circle through three given points.

3. (*a*) The distances of equal chords from the centre of the circle. (*b*) The distances of unequal chords from the centre of the circle.

4. Equal chords correspond to equal angles at the centre.

5. The chord of 60° compared with the radius. To inscribe a regular hexagon in a circle.

6. An inscribed angle is measured by half the intercepted arc. Size of an angle inscribed in a semicircle.

7. Position of tangent with respect to radius drawn to point of contact.

(*a*) To draw a tangent to a circle at a given point on the circumference. (*b*) To draw a tangent to a circle from a given point without the circle. (*c*) To inscribe a circle in a triangle.

8. How to circumscribe a regular polygon about a circle.

9. How to inscribe a circle in a regular polygon, and how to circumscribe a circle about a regular polygon.

THE AREA OF THE CIRCLE.

1. The area of the circle equals about 3.14 times the square of the radius, or briefly $A=3.14\ r^2$, in which A stands for the area of the circle, r for the radius.

This truth can be approximately seen by the pupils with the aid of a figure or model to be supplied by the teacher.

2. Area of a circular ring; of a sector; of a segment.

RELATION OF TWO CIRCUMFERENCES AND OF TWO CIRCLES TO EACH OTHER.

1. Two circumferences bear the same ratio to each other as their radii.

2. Two circles bear the same ratio to each other as the squares of their radii.

B. The Ellipse.

1. (*a*) Occurrence in nature and in structures made by man. (*b*) *Conic sections.* (*c*) To draw an ellipse.

2. Properties. Major axis; minor axis; eccentricity. Foci. *A radius vector.*

3. (*a*) The sum of the radii vectores for all points is constant, and equal to the *major axis.* (*b*) The radius vector drawn to either end of the minor axis is equal to half the major axis.

4. Constructions. (*a*) To draw an ellipse when the axes are given. (*b*) To draw an ellipse when one axis and the eccentricity are given.

PHYSICS.

The following outline of the work in physics has been arranged by Professor Edwin H. Hall, of Harvard University.

It is in the main a selection from the experiments performed by the teachers during the school year 1892–93, under the instruction of Professor Hall. It will be seen that the list does not contain any exercise in Heat, Sound, Electricity, or Magnetism. Professor Hall explains this by saying: "It is my opinion at present that laboratory work in these divisions of physics is too difficult or too expensive for grammar school classes."

LIST OF EXPERIMENTS.

1. *Volume of a solid by overflow of water* from a vessel filled before the immersion of the solid.
2. *Weight of a cubic centimeter of wood* by measuring and weighing a block of rectangular or other convenient shape.
3. *Weight of water displaced by a floating body compared with weight of the body.*
4. *Demonstration of the principle of Archimedes.*
5. *Specific gravity of a solid that sinks in water.*
6. *Specific gravity of wood by immersion with a sinker in water.*
7. *Specific gravity of wood by flotation.*
8. *Specific gravity of a liquid by specific gravity bottle.*
9. *Specific gravity of a liquid by loss of weight of a solid immersed therein.*
10. *The straight lever.*
11. *Experiment upon the centre of gravity of an irregular body, and the influence of its weight when it is used as a lever.*
12. *Laws of the simple pendulum.*
13. *Images in a plane mirror.*
14. *Index of refraction of water.*
15. *Focal length of a lens.*
16. *Law of conjugate foci of a lens.*
17. *Shape of the image (real) of a straight object as formed by a simple lens.*
18. *Parallelogram of forces.*
19. *Experiments upon friction; influence of area of contact and influence of pressure.*
20. *Images in a cylindrical mirror.*

HISTORY.

Grade C and the Eighth Grade. History of the United States to the War of the Revolution.

Ninth Grade. History of the United States continued and completed.

ALL THE GRADES.

Physiology and Hygiene. Give instruction in these subjects in accordance with the requirements of the Commonwealth.

The law is as follows: "Physiology and Hygiene, which, in both divisions of the subject, shall include special instruction as to the effects of alcoholic drinks, stimulants, and narcotics on the human system, shall be taught as a regular branch of study to all pupils in all schools supported wholly or in part by public money."

Moral Instruction. The duty of every teacher is clearly defined by the following extract from the laws of our Commonwealth:

"It shall be the duty of all instructors of youth to exert their best endeavors to impress on the minds of children and youth, committed to their care and instruction, the principles of piety and justice, and a sacred regard to truth; love of their country, humanity, and universal benevolence; sobriety, industry, and frugality; chastity, moderation, and temperance; and those other virtues which are the ornament of human society; and the basis upon which a republican constitution is founded; and it shall be the duty of such instructors to endeavor to lead their pupils, as their ages and capacities will admit, into a clear understanding of the tendency of the above-mentioned virtues, to preserve and perfect a republican constitution, and secure the blessings of liberty, as well as to promote their future happiness, and also to point out to them the evil tendency of the opposite vices."

Physical Exercises. The requirements are as follows: "Midway in each school session five minutes shall be devoted to physical exercises; these shall occur at the same time throughout the building and meanwhile the schoolrooms shall be thoroughly ventilated."

GENERAL DIRECTIONS.

Music. See directions of the Director of Music.

Drawing. See directions of the Director of Drawing.

Penmanship. The number of writing books for each grade shall be determined by vote of the masters, but each master will select from the authorized list the books for his own school.

Text-Books in the Grammar Schools.

Reading Books. Appleton's; Barnes's; Franklin; Harper's; Lippincott's (old and new series); McGuffey's; Sheldon & Co.'s; Stickney's; Swinton's; American Prose; Birds and Bees; Hiawatha; Evangeline and Snow-Bound; Eggleston's First Book in American History; Gilman's Historical Readers; Lessons on Manners; Selections from the Sketch Book; Hawthorne (American Classic Series); Tanglewood Tales; Grandfather's Chair; Wonder Book; Little Daffydowndilly; Sea-side and Way-side; Wood's Natural History Readers; King's Picturesque Geographical Readers No. 1; Scudder's Fables and Folk Stories; Hans Andersen's Stories; Robinson Crusoe; The King of the Golden River; The Children's Hour; Masterpieces in American Literature.

Dictionaries. Worcester's Comprehensive; Worcester's New School. For reference, Worcester's and Webster's Unabridged, and Webster's International.

Arithmetics. Bradbury's Eaton's Practical; Colburn's First Lessons; Seaver and Walton's Mental; Franklin Written; Franklin (Cambridge Ed.)

Book-keeping. Meservey's Single Entry.

Geographies. Swinton's Grammar School. For reference, Lippincott's Gazetteer.

Geometry. Hill's Lessons for the Use of Beginners.

Histories. Higginson's and Scudder's.

Language. Hyde's Practical Lessons in English; Metcalf's Language Exercises; Southworth and Goddard's First Lessons in Language; Tweed's Grammar for Common Schools.

Music. Carey's Graded Exercises; National New Second, New Third, and New Fourth Readers; Whiting's Sixth Reader; Mason's New National Music Charts.

Spelling Books. Harrington's; Metcalf's.

Copy Books. Appleton's; Business Standard; Duntonian; Harper's; Payson, Dunton, and Scribner's.

Drawing Books. Prang's Complete Course.

Desk Books. Barnes's Brief History; The Discovery of America, John Fiske; American Citizen, Charles F. Dole; Civil Government, Charles F. Martin; Elements of Civil Government, William A. Mowry; Our Government, Jesse Macy; Epochs in American History; Pathfinder in American History; America's Wonderlands.

COURSE OF STUDY FOR THE CAMBRIDGE PRIMARY SCHOOLS.

READING.

FIRST YEAR — FIRST GRADE.

(1) Teach reading at first from the blackboard, using short sentences expressing in the pupils' own words thoughts suggested to them by observation and conversation. (2) As soon as the pupils understand that written or printed sentences stand for thought, teach them to recognize the words of the sentences, and then the sounds and letters composing those words. (3) After the first three months of school life, use the authorized reading books for the first grade. (4) Teach a few pieces of standard poetry, also quotations and maxims, as a part of the regular exercises, and copy what is taught each term into a blank book.

Remarks. (1) Pleasant conversational tones should be cultivated in the pupils in speaking to one another, and the same tones should be used in their reading. (2) "To give ease and naturalness, nothing is more important than to read in phrases. Thus, 'I can see,' should be spoken as fluently as if it were one word, like 'repartee.' (3) The articles *a* and *the* should be joined to the following word, as if they formed the first syllable of it." (4) The pupils should be so guided as gradually to gain the power of making out the words of a sentence and of getting its thought. (5) A portion of the time devoted to reading should be set apart for reading aloud by the teacher. Standard literature suited to the capacity of the pupils should be used.

SPELLING AND DICTATION.

FIRST YEAR — FIRST GRADE.

(1) Give the pupils careful, persistent drill in analyzing the spoken word into its elementary sounds, and the written word

into the letters or combinations of letters representing those sounds. (2) By the beginning of the spring term let the pupils write words and short sentences from dictation. (3) Lead them to observe (a) that the first word of every sentence begins with a capital letter; (b) that the word, I, is a capital letter; (c) that the names of persons, days of the week, and months of the year begin with capital letters; (d) that a period is placed after every complete statement; (e) that every question is followed by a question mark. (4) Teach the use of the apostrophe when it denotes possession. (5) Teach the names and sounds of all the letters before the close of the year.

Remarks. (1) Pupils should have much practice in the use of letter tablets in word and sentence building. (2) The spelling of words from memory should not be required until pupils can spell them readily at sight and point to each letter as it is named. (3) The sentences used for the spelling and dictation lessons should contain words selected from the other lessons of the day. (4) The work in dictation should be the means for teaching the technical part of written language. (5) This technical work should include, among other exercises, the copying of sentences from the reading book, blackboard, or cards; the writing of sentences dictated by the teacher; and the writing of sentences containing certain words specified by the teacher, the spelling of which has already been taught.

WRITING.

FIRST YEAR — FIRST GRADE.

(1) Teach the forms and names of the letters and the Arabic numerals in the order given in Harper's Writing Manual. (2) In addition to the practice in writing the letters separately, let the pupils copy words and sentences from the blackboard and from cards. (3) Teach them to write their own names, first copying them from cards, later writing them from memory.

Remarks. (1) At first pupils should write upon a well-ruled slate with a long, well-sharpened pencil; later, they should use paper and pencil. (2) From the beginning give attention to the form, size, and slant of letters, and as soon as possible to

spacing (distance apart). (3) Careful attention should be given to the writing position, and it should be required so far as possible in all written work. (4) During each writing lesson much time should be spent in examining each pupil's work, giving the needed suggestions. (5) The small letters, the capital letters, and the Arabic numerals should be upon the blackboard at all times.

NUMBER.

FIRST YEAR — FIRST GRADE.

Teach the numbers from 1 to 10 inclusive.

Adding and subtracting with objects:

a. Without figures.

b. With figures.

Multiplying and dividing with objects:

a. Without figures.

b. With figures.

Teach the equal fractional parts of the numbers taught by means of objects.

Give much practice in adding short columns of figures, the sum not to exceed 10; verify by subtraction.

Let the numbers be written in words.

Teach the Roman numerals to 10.

Teach the pupils to divide an object into halves, thirds, and fourths; and to combine halves, thirds, and fourths to form the whole again.

Teach the one-cent and two-cent pieces, the nickel and the dime, and give practice in the use of toy money. Teach the number of pints in a quart, days in a week, and months in a year.

Use the Cambridge Number Cards :— First Year's Work.

A variety of easy problems should be invented by both teacher and pupils in connection with the work in number.

READING.

SECOND YEAR — SECOND GRADE.

(1) Use the authorized reading books for the second grade. (2) Teach a few pieces of standard poetry, also quotations and

maxims, as a part of the regular exercises, and copy what is taught each term into a blank book.

Remarks. (1) See remarks for the first grade. (2) The blackboard should be in constant use. Each day the pupils should find upon it new reading matter — some interesting fact, an example in number, a story, a question, or a direction. (3) To train pupils to get the thought as they read, they should be questioned upon the text, and be required to give in their own words the substance of the story read. (4) Pupils should be allowed to read frequently without correction or comment on the part of the teacher. (5) The reading of poetry should not be omitted. (6) A portion of the time devoted to reading should be set apart for reading standard literature suited to the capacity of the pupils. A part of this should be done by the pupils, the selections being simple enough to be read without hesitation, "interesting enough to keep the attention of the class, and valuable enough to be worthy of becoming a permanent possession of the children's minds." (7) Pupils should have practice in the elementary sounds of the consonants and consonant combinations, separately and in combination with the vowels. This will help to secure good tone and correct pronunciation, and will enable them to find out words for themselves.

SPELLING AND DICTATION.

SECOND YEAR — SECOND GRADE.

(1) Continue phonic analysis, and oral spelling of words by letter, also the writing of words and sentences from dictation. (2) Review the use of capital letters given for the first grade. (3) Lead the pupils to observe (*a*) that the word, O, is a capital letter; (*b*) that the first word of every line of poetry begins with a capital letter; (*c*) that the names of countries, cities or towns, schools, streets, squares, parks, states, and holidays begin with capital letters. (4) Review the use of the period given for the first grade, and teach that every abbreviation should be followed by a period. (5) Review the use of the question mark. (6) Review the use of the apostrophe to

denote possession, and teach its use in contractions. (7) Teach the arrangement of work upon slate or paper. (8) Teach the abbreviations *Mr.*, *Mrs.*, *Ans.*, *A. M.*, and *P. M.* (9) Pupils should know the alphabet before the close of the year.

WRITING.

SECOND YEAR — SECOND GRADE.

(1) Continue the practice in writing the letters separately, also in making the Arabic numerals, and in copying words and sentences from the blackboard, cards, and books. (2) Let the pupils write their own addresses and the name of their teacher and of their school.

REMARKS. See remarks for the first grade.

NUMBER.

SECOND YEAR — SECOND GRADE.

Review the work for the first grade.

Teach addition and subtraction, multiplication and division of numbers to 50, no multiplier or divisor greater than 12 required. The numbers to 20 should be taught objectively.

Teach the equal fractional parts of numbers to 50. The fractional parts of the numbers to 20 should be taught objectively.

Give much practice in rapid work, especially the addition of short columns of figures. Verify the work in addition by subtraction.

Let the pupils write in words and in figures the numbers to 50.

Teach the Roman numerals to 50.

Add by twos, threes, fours, etc., to 50; subtract by twos, threes, fours, etc., from 50.

Continue the work in the invention of problems by both teacher and pupils.

Teach operations in addition, subtraction, multiplication, and division to 50, one of the numbers being greater than 10, the other 10 or less than 10.

Teach the number of dimes and of cents in a dollar, and con-

tinue the use of toy money. Teach the number of quarts in a gallon, quarts in a peck, pecks in a bushel, and units in a dozen.

Use Cogswell's Lessons in Number.

READING.

THIRD YEAR — THIRD GRADE.

(1) Use the authorized reading books for the third grade. (2) Teach a few pieces of standard poetry, also quotations and maxims, as a part of the regular exercises, and copy what is taught each term into a blank book.

REMARKS. (1) See remarks for the second grade. (2) Occasionally assign a piece to be read silently; and, without having it read orally, require pupils to give in their own words the substance of what they have read.

SPELLING AND DICTATION.

THIRD YEAR — THIRD GRADE.

(1) Review the work for the previous grade. (2) Continue phonic analysis and oral spelling of words by letter, also the writing of words and sentences from dictation. (3) Before the close of the year the pupils should know the Alphabet Song as arranged by the director of music.

WRITING.

THIRD YEAR — THIRD GRADE.

(1) Continue the work as suggested for the second grade. (2) Let the pupils write their own addresses, the name of their teacher and of their school, and the names of other pupils in the class.

REMARKS. See remarks for the first grade.

NUMBER.

THIRD YEAR — THIRD GRADE.

Review the work for the second grade.

Teach addition and subtraction, multiplication and division

of numbers to 144 inclusive, no multiplier or divisor greater than 12 required.

Teach the equal fractional parts of numbers to 144 inclusive, using no fraction smaller than $\frac{1}{12}$.

Continue the practice in rapid work, especially the addition of columns of figures, and aim to secure accuracy as well as rapidity. Verify the work in addition by subtraction.

Add by twos, threes, fours, etc., to 100; subtract by twos, threes, fours, etc., from 100.

Teach easy problems involving the different combinations and separations taught.

Let the pupils write numbers in words and in figures to thousands; also let them perform simple examples in addition, subtraction, multiplication, and division.

Continue the work in the invention of problems by both teacher and pupils.

Teach Roman numerals to 100.

Teach the number of gills in a pint, ounces in a pound, seconds in a minute, minutes in an hour, hours in a day, days in a common year, inches in a foot, feet in a yard, square inches in a square foot, and square feet in a square yard.

Give exercises in buying and selling and making change, telling the time of day, and weighing and measuring.

Use Cogswell's Lessons in Number.

LANGUAGE.

ALL THE GRADES.

(1) Give pupils daily practice in speaking and writing their own thoughts, in order that they may be trained to speak and write fluently and correctly. The following subjects may be used for this purpose: — Color, form, size, qualities of objects, the human body, plants, animals, natural phenomena, the reading lessons, pictures, short stories chosen from myths, lives of heroes and heroines, and events in our own and other countries. (2) The written language should include exercises to teach the correct use of capital letters, punctuation marks, etc., as suggested under Spelling and Dictation, also the writing of the pupils' own thoughts as suggested by their observation and

conversation lessons. (3) Occasionally have pupils make requests in writing. (4) In the third grade use Hyde's Practical Lessons in English, Part I.

DESK WORK.

ALL THE GRADES.

The purpose of this work is to cultivate in pupils habits of study aud industry, to furnish profitable employment for the hours of school not occupied by oral work, and to train the pupils so that they will know how to employ usefully their leisure time out of school.

Let the program for desk work be as carefully prepared as for oral class exercises.

Place upon the board the program of desk work for one session. Give enough work to employ the quickest of the pupils during the session. Do not require the slower pupils to accomplish all the work, but require them to be studious and to do as much as they can do well.

Connect the desk work as closely as possible with the oral class exercises, and let the one depend upon, or be a partial preparation for, the other.

Let the desk work be as varied as possible, and include exercises in reading, language, and number; in the use of the letter, word, and number tablets; in drawing and in manual training.

Have regular times for the examination of the desk work, and require all work to be well done.

ALL THE GRADES.

Physiology and Hygiene. Give instruction in these subjects in accordance with the requirements of the Commonwealth.

The law is as follows: "Physiology and Hygiene, which, in both divisions of the subject, shall include special instruction as to the effects of alcoholic drinks, stimulants, and narcotics on the human system, shall be taught as a regular branch of study to all pupils in all schools supported wholly or in part by public money."

Moral Instruction. The duty of every teacher is clearly defined by the following extract from the laws of our Commonwealth :

"It shall be the duty of all instructors of youth to exert their best endeavors to impress on the minds of children and youth, committed to their care and instruction, the principles of piety and justice, and a sacred regard to truth ; love of their country, humanity, and universal benevolence ; sobriety, industry, and frugality ; chastity, moderation, and temperance ; and those other virtues which are the ornament of human society ; and the basis upon which a republican constitution is founded ; and it shall be the duty of such instructors to endeavor to lead their pupils, as their ages and capacities will admit, into a clear understanding of the tendency of the above-mentioned virtues, to preserve and perfect a republican constitution, and secure the blessings of liberty, as well as to promote their future happiness, and also to point out to them the evil tendency of the opposite vices."

Physical Exercises. The requirements are as follows: "Midway in each school session five minutes shall be devoted to physical exercises ; these shall occur at the same time throughout the building and meanwhile the schoolrooms shall be thoroughly ventilated."

The Ling system of Swedish gymnastics, as adapted for the primary schools of Boston, is to be used in all the grades.

GENERAL DIRECTIONS.

Music. See directions of the Director of Music.

Drawing. See directions of the Director of Drawing.

Botany. See directions of the Special Teacher of Botany.

Text-Books in the Primary School.

Reading Books. Barnes's Second; Davis's First and Second; New Franklin Second; Harper's First and Second; McGuffey's Second; Stickney's First and Second; Swinton's Second; Book of Fables; Children's Primer (Cyr); Interstate Primer; Riverside Primer and Reader; Seaside and Wayside, Nos. 1 and 2; Swinton's Golden Book; Wood's Natural History Readers, Nos. 1 and 2.

For Teaching Number. Cogswell's Lessons in Number; Badlam's Number Cards; Cambridge Number Cards.

Music. Mason's New National Music Charts; Mason's New First Music Reader.

Language. Hyde's Practical Lessons in English, Part I.

Desk Books. Blackboard to Books; Grimm's Tales, (Crane); Kindergarten Stories and Morning Talks; Stories for Kindergartens and Primary Schools; Peck's Graded Lessons in Number; Wentworth and Reed's First Steps in Number; Badlam's Suggestive Lessons in Language and Reading; Harrington's Spelling Book, Part I.

LIST OF GEOGRAPHICAL LANTERN SLIDES

PREPARED FOR USE IN THE CAMBRIDGE PUBLIC SCHOOLS,
BY WILLIAM M. DAVIS,
PROFESSOR OF PHYSICAL GEOGRAPHY IN HARVARD UNIVERSITY.

The following list of geographical lantern slides, arranged under a rough classification, is intended to aid teachers who can illustrate their lessons by the lantern and thus present the facts of geography in the most realistic manner. The slides have been selected from at least twenty times as many views as are here represented; many of the originals being included in the Gardner collection of photographs in the geological department of Harvard University; others being in the collections of various dealers. The list is not regarded as final; various omissions may be filled at a later date; but delay in publication has not seemed advisable. In case the list is found useful to teachers elsewhere than in Cambridge, it is requested that those who have good geographical landscape views of subjects or localities not here represented, or views of striking geological structures, will send them to the author for examination, with permission to reproduce them if desired.

While some attention has been given to the localities represented by the slides and their distribution over our country, the first desire in making out this list has been to select views that should give good illustration of characteristic geographical features. Brief notes are added to call attention to the physical explanation of the more important features. Few foreign examples have been included. Twenty-five of the most desirable slides are marked by asterisks. The letters and numbers at the end of each explanatory note are explained on the last page.

Many of the classes of subjects here represented by photographic illustrations will be found represented by maps in the list of "Governmental Maps for Use in Schools," by Messrs. Davis,

King and Collie, lately published by H. Holt & Co., New York; an outcome of the Geographical Conference of the National Educational Association, in 1892. Teachers will find that these two kinds of illustrations supplement each other most effectively. The explanation of many of the slides, as applying to the physical geography of New England, is further extended in a pamphlet by the author, entitled "Geographical Illustrations," published by Harvard University.

PLAINS AND PLATEAUS.

Numbers 1 to 19 represent plains and plateaus, varying in conditions of origin, in degree of dissection, and in fertility. The first twelve views exhibit unbroken plains of exceptionally level surface. The later numbers illustrate the successive stages in the dissection of this group of forms; first by narrow valleys, then by wider valleys and by valley lowlands, until at last only isolated mesas and outliers remain above a broad lowland of denudation.

1. Vista near Lakewood in the great pine plains of southern New Jersey; a recently emerged sea bottom, the type of a vast area along our Atlantic border. [H.]

2,* 3. Level prairie, the "valley" of the Red river of North Dakota; formerly during a colder climate the bottom of an extensive lake, whose waters were held in on the north by the retreating ice sheet of the glacial period; now under a milder climate a fertile farming country. Many prairies of this origin are found in our northern states. The only interruptions of the horizon are houses, barns, "tree claims" (groups of planted trees), and straw stacks. No. 2, is a harvesting scene on a vast wheat field in Traill county; No. 3, shows a herd of cattle grazing in Cass county. The photographs from which these slides are made were exhibited at the World's Fair by the Commissioner of North Dakota, 1893. [H.]

4. Dry interior plain about the city of Queretaro, on the plateau of Mexico. This is the type of the desert interior plains of Utah and Nevada. Many plains of this kind were formerly lake beds, now exposed by a change from a more humid to the present arid climate. [J. 1126.]

5.* Lava plain, the unworn surface of a lava flood occupying a broad basin in southern Idaho; photographed by Prof. G. F. Wright, Oberlin, Ohio. Barren lava in the foreground; sage brush, characteristic of the dry climate of our western interior, scattered over the plain. Compare with Nos. 49, 50 and 13. [H.]

6. The plateau of snow and ice over the interior of Greenland, from a photograph taken by Nordenskiold. A broad, cold desert; of particular interest to us, from being the best modern representative of the ancient ice sheet that spread over the northern part of our country in the glacial period. The view is not a particularly fine one, but makes up for its quality by its rarity. [H.]

7. Till plain near Columbus, Ohio; photographed by Prof. E. Orton. A plain of unstratified glacial drift (till), smoothly spread out under the creeping ice sheet of the glacial period. Many prairies in the northern central States are of this kind. [H.]

8*a*, 8*b*.* Flood plain of the Mississippi river, Louisiana and Mississippi; a broad alluvial plain, spread out by the great river (see 58); exceptionally fertile, producing rich crops of sugar cane (8*a*) and cotton (8*b*). [J. 1560,7446.]

9, 10. Delta plain of the Yahtse river, Alaska; photographed by Prof. I. C. Russell. This river issues from the Malaspina glacier (see 74 to 78), heavily charged with detritus, and spreads out a plain of gravel and sand. Its network of channels (9) frequently shifts from place to place. The wash of gravels may invade forests, killing the trees by burying their trunks (10). [H.]

11. Plain of glacial gravels and sands, Cape Cod, Mass.; view taken by the author, from a morainic hill on the north side of the Cape, looking south; a glacial boulder in the immediate foreground. The conditions of origin of this plain are illustrated in the two preceding slides, (see also, 78). [H.]

12. Tidal marsh, Cohasset, Mass. The quiet waters of sheltered bays (see 108), are gradually filled to the level of high tide by silt and vegetable growth; meandering channels for tidal streams being kept open across their even surface. Crops of "salt hay" are often gathered from these plains. They occupy great areas along our Atlantic coast. [H.]

13. A deep valley in the western Ghâts (escarpments) of the lava plateau of southern India. Although the development of valleys is here well advanced on the margin of the plateau, the surface further inland is very little dissected, (see also 49, 50). [H.]

14. The Llano Estacado or stockaded plain of western Texas, from a photograph by Prof. R. S. Tarr, Cornell University. This plateau is so called from being rimmed on nearly all sides by descending cliffs, where the upland surface descends to lower levels. The view shows only the broad unbroken plateau, where it is not yet dissected by the erosion that has formed the encircling cliffs. [H.]

15.* The valley of the Blackwater in the forest-covered Appala-

chian plateau of West Virginia. The extensive upland is well dissected by deep, narrow, ramifying valleys, producing a surface of strongly varied relief. Compare with the canyon of the Grand river, (44,) and of the Colorado, (46). [J. 131.]

16. The valley of the Elbe at Schandau in the plateau of Saxony, Germany; a well opened valley, showing the beginning of a narrow flood plain (see 58); thus introducing belts of lowland between the remaining plateau uplands. [McA. 6806.]

17.* The Great plains of the west, here shown with a rolling, treeless, grassy surface in North Dakota. A large flock of sheep in the foreground. A distant view of the plains from the mountains is given in No. 24. [H.]

18. The Great plains of the west, here shown with sparse vegetation in the dry climate of eastern Montana. A large herd of cattle in the foreground. A few cottonwood trees by a small stream in the distance. A mesa rises in the background, one of many remnants of a once much more extended plateau, now greatly consumed by the branching and widening of valleys and by the wasting and retreating of cliffs. Isolated forms of this kind are used as citadels by the Zuñi Indians; one is used as a "state prison" in Abyssinia. [McA. 42, Montana, Cattle ranche.]

19. The "Lighthouse" outlier, central Wisconsin; one of the isolated remnants of an ancient upland, now almost completely consumed by long continued erosion, leaving a broad, open lowland of denudation. [H.]

MOUNTAINS.

Nos. 20 to 30 represent high mountains of still vigorous form; 20 to 25 being examples from the Rocky mountains of Colorado. 31, 32, and 33 are older mountains of moderate altitude, presumably much reduced from their former height. 34 and 35 represent mountains that were once high; that were slowly worn down lower and lower till they were reduced to a lowland; the lowland was then raised evenly to an upland or plateau, and valleys were eroded in its uplifted surface: the present even-topped mountains or highlands are the little-worn parts of the uplifted lowland.

20.* Long's peak, Rocky mountains; a characteristic view of the snow-patched mountains rising over one of the open valleys, known as Estes park. [J. 361.]

21. Sultan mountain; a well defined mountain mass, descending into deep valleys. [J. 186.]

22. Gray's peak; exhibiting the comparatively regular, graded slopes to which many of our western mountains are reduced; the lower stretches of the slopes are forest clad; the upper stretches are long inclines of loose, barren rock-fragments. [J. 1152.]

23. Mt. Ouray and Marshall pass. This mountain exhibits still better than the preceding one the prevalence of graded slopes of loose rock and soil, characteristic of a dry climate. Where the rainfall is greater, the slopes are better washed and show a greater variety of form. The line of the Denver and Rio Grande railway may be seen, curving around the spurs on its way to Marshall pass, in the distance at the left base of Mt. Ouray. [J. 1426.]

24. Timber line on Pikes peak. The upper limit of tree growth is here shown on the evenly graded southern slope of the mountain. The slope consists of loose rocks, weathered from the mountain mass and slowly creeping down the mountain side. The view looks east over the Great plains, which stretch to the horizon, as even as the ocean. [J. 1223.]

25. Georgetown, Colo., a mining town in a deep valley among the mountains. [J. 1033.]

26.* Mount St. Elias, as seen from the Malaspina glacier, looking northward; photographed by Prof. I. C. Russell. Being of great height and close to the ocean, the mountain is heavily snow-clad, and with its fellows yields great streams of ice or glaciers that creep slowly to the sea (see also, Nos. 74 to 78). [H.]

27,* 28, 29. Yosemite valley, Sierra Nevada mountains, California. No. 27, a general view, looking east; 28, El Capitan; 29, the South or Half Dome. This valley is a great depression beneath the mountainous upland, enclosed by stupendous cliffs of granite. [J. 1330, 1332, 1338.]

30.* Mt. Blanc, Alps of Savoy; view taken from the Brévent, looking southeast across the deep valley of Chamounix. The glaciers des Bossons and de Taconnaz (left and right) descend in narrowing tongues from the upper snow fields; their lateral and terminal moraines are well shown on the lower slopes. [McA. 2090.]

31. White mountains, North Conway, N. H.; valley of the Saco river in the foreground. The moderate slopes of these old mountains should be compared with the steeper forms of the preceding examples. [McA. 619 N. H.]

32, 33. Adirondack mountains; often tree clad to the summits. See also Nos. 89, 90, where the lakes among the mountains are shown. [St. 66, 488.]

34. Highlands of northern New Jersey; photographed by Prof. J. E. Wolff. Plateau-like uplands of hard rocks, without peaks rising above the general level, but deeply trenched by northeast-southwest valleys that have been eroded on belts of softer rocks. Compare with Nos. 53, 54 and 91. [H.]

35. Kittatinny mountain and Delaware water gap; Pennsylvania and New Jersey; photographed by Prof. J. E. Wolff. View looking north across the great Appalachian limestone valley, to the long even-crested sandstone mountain ridge. The water gap is a transverse valley, cut across the mountain by the Delaware river. The weaker rocks on either side of the mountain ridge have wasted away from as great a height as that of the mountain crest; thus being reduced to broad valley lowlands, while only a narrow notch has been cut in the hard rocks which stand up as the even-crested ridge. [H.]

VOLCANOES AND THEIR ASSOCIATED FORMS.

This series includes a number of illustrations not ordinarily associated with volcanoes; yet properly belonging in a volcanic series.

36.* Vesuvius in eruption; a remarkable view of the great cloud formed over the volcano during the eruption of April, 1872; taken by Sommer, April 26, 1872, at 5 P. M., looking southeast across the Bay of Naples. [H.]

37. Muirs butte, Cala.; a volcanic cone of smooth slopes and hence of relatively recent eruption, rising over a broad platform covered with pine forest. [J. 1372.]

38.* Mt. Shasta, Cala.; a great volcano, scored with ravines radially descending its slopes; hence it may be inferred that a considerable time has elapsed since its building. [J. 1326.]

39. Mt. Hood, Or.; like the preceding, but more deeply dissected, showing little if any of its original conical slopes; bearing more snow from being in a somewhat moister and colder climate. The view shows a beautiful reflection of the peak in Lost lake. [J. 1378.]

40. Ropy lava flow, Hawaii; a comparatively smooth lava surface, characteristic of flows that remain unbroken after first solidifying; locally called "pa-hoe-hoe," in contrast to the rough fields of loose angular fragments, called "a-a," that are formed where continued movement breaks the first-formed crust into sharp clinkers. [H.]

Nos. 5, 13, 49 and 50, mentioned elsewhere, exhibit extended lava plains, the outpourings of great eruptions, more or less dissected.

It is uncertain whether volcanic cones were formed when the lava of these plains was erupted; or whether their lava rose through fissures that are now buried.

41.* Mato-tepe, Wyo.; photographed for the U. S. Geological Survey by Prof. I. C. Russell. The "stock" or root of an ancient eruption. This great column is the filling of a tube, up through which the lavas rose from unknown depths beneath to unmeasured heights above the present surface; perhaps overflowing on the then surface of the region. But since then, the region has been greatly denuded; and, as the country rock is weaker than the lava core, the latter has withstood erosion effectively enough to gain a strong relief above the surrounding surface. Such buttes as this are not uncommon in the west, although few of them have so bold a form. [H.]

42. Palisades of the Hudson. The edge of a great sheet of lava, that was driven between the under and overlying strata of sandstone. The whole mass of bedded rocks and lava has been tilted so that the strata now slant to the west; the underlying and overlying sandstones, being weaker than the lava sheet, have been worn away, leaving the resistant lava as a ridge. The view shows the palisaded or columnar structure of the lava on the eastern face of the ridge, and the talus descending to the river. The back or western slope of the ridge descends gently to the valley of the Hackensack in northern New Jersey. [McA. 282.]

43. Monarch Geyser, Yellowstone Park, Wyo. A distant view of the geyser in eruption, exhibiting its position in a depression in the forest-covered upland. The region is a lava plateau, and the geysers are attributed to the lingering heat of the deep buried masses. [McA. 1949.]

RIVERS AND VALLEYS.

This series includes a variety of geographical features, illustrative of the natural history of rivers.

44. Grand river canyon, Colo. A narrow canyon, cut in a barren plateau by a river of considerable volume. Lateral ravines are beginning to dissect the canyon walls; and large amounts of rock-waste are thrown into the river at the mouth of each ravine, especially at times of heavy rain storms. Although the canyon is too narrow for an ordinary roadway, a railroad has been constructed through it. [J. 1430.]

45. Canyon del Muerte, Ariz. A similar canyon, carved by a

smaller stream. The cliffs of this canyon contain a number of "houses," once occupied as citadels by Indians. (See 122.)

(Soule, 1890 Sup. 878.]

46,* 47, 48. Colorado canyon, Ariz. This great valley, so impressive by reason of the vast depth to which it dissects the plateau, must nevertheless be regarded as only a young valley, marking the beginning of the work of the river in carrying away the land mass through which it flows. Where the rocks are resistant, the canyon walls are steep (46); where the rocks are weaker, the walls are greatly dissected by a labyrinth of colossal ravines (47, 48).

[Soule, 1890, Sup. 879; J. 3107, 6484.]

49, 50. Shoshone falls, Idaho. A lava plain, similar to that shown in No. 5, is traversed by the Shoshone or Snake river, and thus a great canyon has been cut across the plain. The views are taken at the falls, where the river leaps from a shallower to a deeper part of its trench. The upper, shallower canyon has been cut through the topmost sheet of lava; the lower, deeper canyon has been cut through both the topmost sheet and also through an earlier, under sheet. Falls commonly occur under these conditions — the cutting of a valley through hard layers of rock, whether of aqueous or igneous origin. No. 49 is taken looking down stream from above the falls; No. 50 looks up stream from below. [J. 1112, 1111.]

The valley of the Elbe, already described, (16) may be used in illustration of a more mature valley than any thus far named in the river series.

51, 52. Cataracts of the Nile. This great river, rising under the equatorial rains, has cut its valley across the great desert of northern Africa and at several points it has trenched through the horizontal beds of sandstone, of which the greater part of the desert consists, and has discovered the uneven foundation of hard rocks on which the sandstone strata were laid down. Here the deepening of the valley is delayed; here the river runs in strong rapids, especially at time of high water; these are the "cataracts" of the Nile.

[Soule, 6138; Th. 9827.]

53. Deerfield valley, Mass.; a steep-sided valley, about a thousand feet deep. This view is in the Berkshire plateau of western Massachusetts, a part of the northwestern extension of the Appalachian plateau, already represented in the highlands of New Jersey. The traveller in the valley does not perceive the general evenness of the uplands; but on ascending to the hilltops, the comparative equality of altitude, far and wide, is clearly seen. [H.]

54, 55,* 56. The Hudson river. The highlands of south-eastern New

York, a part of the Appalachian highlands extending from New England into New Jersey, are traversed by the Hudson river. It has trenched them across, just as the Delaware river has trenched Kittatinny mountain at the water gap (35). A general view of the deep Hudson valley in the plateau-like highlands, looking east from Fort Putnam (up-hill from West Point), is given in No. 54; a closer view of the great river is given in No. 55, looking up-stream from West Point. The great volume of water in the river calls for special explanation, in view of the moderate area that it drains. The upper Hudson, at Glens Falls, above Albany (56), is only a shallow stream. As the tides are felt up to Albany, it is believed that the region has been slightly depressed since the valley was cut out; thus the lower half of the river has been "drowned," giving it navigable depth, a matter of great importance to New York city. [St. 1303; J. 1515; St. 664.]

57. Gorge of the Potomac river, below the junction of the Potomac and Shenandoah at Harper's Ferry. The foreground is in West Virginia; Maryland is across the Potomac on the left; Virginia is across the Shenandoah on the right. The Blue ridge, as the Virginia portion of the Appalachian highland is called, is here traversed by the Potomac; but the river has not been "drowned," like the Hudson. Its waters are shallow, and the rocky ribs of the mountain may be seen crossing its channel in riffles. The Hudson, the Potomac and various others of our Atlantic rivers drain the great Appalachian valley through deep gorges in the Appalachian highland, furnishing excellent examples of the relation between an interior longitudinal valley-lowland and the deep transverse valleys by which the inner waters escape through the highlands. It is important to remember that the interior valley lowland has been deepened only as fast as the cutting down of the transverse valley permitted. [J. 76.]

58. Flood in the valley of the Ohio river, New Albany, Ind. An imperfect photograph — but the best now accessible — of an overflow of the Ohio river; the streets in the towns on its banks being flooded, and the people going about in boats. At these times, the muddy water lays down a deposit of fine sediment or silt, and thus builds its flood plain; a broad, flat, meadow-like plain on either side of its channel. (See Nos. 8a, 8b.) The fertility of the valley of the Nile has depended on such overflows from time immemorial. [H.]

59. The Missouri river, Belmont bend, Mo. This great river has cut a steep-bluffed trench, a mile or two wide, in the upland of the state of Missouri, and has laid down a flood plain from bluff to bluff. The current of the river, flowing against the outer bank of its curving channel, cuts away the fine soil of the plain. Various expensive engi-

neering operations are undertaken to prevent this, and to constrain the river to follow a fixed channel; often without permanent success. [H.]

60.* Mississippi river at Baton Rouge, La. The great river, whose flood plain has already been shown, (8), is pictured here in its lower course. A river steamboat is about to make a landing. [J. 7426.]

61. Grand Junction, Colo. The Grand river here has a broad valley in a barren region; but where the waters of the river can be led out in irrigating canals, the soil becomes productive; thus imitating artificially the natural overflow of the Nile, already referred to. [J. 113.]

The delta plain formed where a river enters the sea, has been illustrated in Nos. 9 and 10. Large rivers with fine detritus make flat deltas; smaller streams with plentiful coarse detritus make steeper deltas, as illustrated in the next number.

62.* Talus cone, valley of the South fork of the Stinking-water, Wyo.; photographed for the U. S. Geological Survey by T. A. Jaggar. Gulleys in the upper slope of the mountain discharge the rock waste to the lower slope in such quantity that it accumulates in great conical deposits. No constant stream is present to reduce the grade of the cone. According to the proportion of the rock-waste to the water that is discharged from the upper mountain sides, these conical deposits vary their slope; being steeper in dry regions; flatter in moist regions, where they are called alluvial fans, or deltas. According to the quantity of waste discharged and to the time during which the process has been going on, the cones or fans vary in size. In southern California, where the mountains are high and the climate dry, there are fans whose height at the apex is six hundred feet above their margin; and whose radius is ten miles. In regions of moderate altitude and plentiful rainfall, alluvial fans are inconspicuous. They may therefore be regarded as examples of climatic topographical forms. [H.]

63. Fall creek, Ithaca, N. Y.; looking westward, down the gorge to the valley at the head (south) of Cayuga lake. Glacial drift has been spread irregularly over this region, in common with the rest of the northern states, and streams are very generally diverted from their preglacial courses to new paths, on which they are now actively cutting down new valleys. It is very commonly the case that falls characterize the early stages of this process, as here shown. The water power at the manufacturing cities of Manchester, N. H., and Lowell, Mass., (121) is derived from falls of essentially this character. [St. 634.]

64. Ausable chasm, N. Y. The Ausable river, issuing from the Adirondacks, and finding its preglacial course concealed by drift, has taken a new course, on which it has cut down this deep and narrow gorge, or chasm. This is manifestly a young valley compared to more open valleys, such as that of the Elbe (16). [St. 18.]

65, 66,* 67, 68. Niagara. The drainage of the Great lakes follows new courses since the glacial period; the preglacial rivers of the region not being certainly known. The postglacial discharge of Lake Erie to Lake Ontario by the Niagara river ran across a platform which descends on the north in a cliff or escarpment, three hundred feet or more in height. Here the river first leaped in its great cataract. Since then, it has cut back its gorge (65) about seven miles to the present site of the falls (66, general view). During most of the time while the falls were receding from their original position at the face of the escarpment, there has been only a single cataract; but at present, the river is divided by Goat island, making the Canadian or Horseshoe fall on the west side (67), and the American fall on the east (68). [J. 4033, 4021; McA. 525; J. 4022.]

GLACIERS AND GLACIAL ACTION.

The great importance of ice action during the glacial period in determining many of the smaller features by which the northern states are characterized, warrants the introduction of the following views as geographical illustrations. The glaciers on Mt. Blanc have already been mentioned (No. 30).

69. Viesch glacier, Alps of Valais, Switzerland; a long serpentine ice stream, between steep mountain slopes, bearing a well-marked medial moraine. [Soule, Switz. 5836.]

70, 71. Muir glacier, Alaska; photographed by H. F. Reid. Two views of this great ice field, with its many branches among the Alaskan mountains (70), and its cliffed front where it enters the waters of Glacier bay (71); taken from an elevated point south of the glacier. [H.]

72, 73. Davidson and Taku glaciers, Alaska; smaller than the Muir glacier, but like it, entering the sea and terminating in cliffed fronts. These views are taken from the sea. [Haynes, 5010, 5012.]

The five following views are of Malaspina glacier, Alaska; taken by Prof. I. C. Russell. The condition of our northern states during the glacial period is much better represented by these views than by those from Switzerland, where the ice streams are confined to narrow valleys.

74.* Central portion of Malaspina glacier; free from morainic debris; a vast plain of ice. [H.]

75. Moraine-covered portion of the glacier. The detritus here strewn over the surface is derived chiefly from rocky spurs among the mountains that supply the snow and ice. By the melting away of the ice surface as it approaches the sea, much detritus that was before invisible becomes exposed. [H.]

76. Forest growing on the moraine of the Malaspina glacier, near its southern border. [H.]

77. Source of the Yahtse river, issuing from a subglacial channel at the base of the debris-covered frontal slope of the ice sheet. Views of the delta of this stream are given in Nos. 9 and 10. [H.]

78.* General view of the Yahtse gravel delta in the foreground; the glacial plain, with its gently sloping surface and steep sloping frontal margin, in the middle distance; lofty mountains, whence part of the ice is derived, in the background. This is an exceptionally valuable view, and of particular interest in simulating the conditions of our northern states during the glacial period, except that with us there were no overtopping mountains in the background. [H.]

The ice plateau of Greenland has already been mentioned (6).

79,* 80. Icebergs, Baffin bay, Greenland. Great masses of ice detached from glaciers that descend to the sea from the Greenland ice sheet. No. 79 shows an iceberg alone, with an excellent reflection in the quiet water; No. 80 is a larger iceberg, with the "Panther" exploring vessel in the foreground. [Black.]

81. Pack ice, Baffin bay, Greenland; ice formed on the surface of the sea, and pushed together in great fragments when moved by conflicting currents. [Black.]

82. The midnight sun of the Arctic regions; taken in Baffin bay, Greenland. A somewhat irrelevant subject, but of interest as reproduced from an actual photograph taken in an Arctic midnight. [Black.]

83. Glaciated rock surface, near Eastport, Me.; view taken by the author. The rock was rounded, smoothed and striated by the detritus that was heavily dragged over it under the ice sheet of the glacial period. [H.]

84. Glaciated summit of Mt. Monadnock, N. H.; elevation, 3186 feet; view by J. H. Ropes. Postglacial weathering has somewhat cracked and pitted the rock surface; but it still exhibits a distinctly rounded form, with glacial grooves following its lines of curvature. The great depth of the New England ice sheet can be inferred from this example. [H.]

85. Boulder of gneiss, carried from Canada into Ohio by the ice-sheet; photographed by Prof. E. Orton (see also, No. 11). [H.]

A till plain is already illustrated in No. 7. Judging from numerous borings for oil and gas in northern Ohio, the rock surface under the till plain is much more uneven than the present surface.

86. Drumlin near Groton, Mass.; photographed by G. H. Barton, Mass. Institute of Technology, for the U. S. Geological Survey. Drumlin is an Irish name given to rounded, elliptical hills of till, or unstratified glacial drift, sometimes enclosing beds of gravel. These hills are common in New England and in Wisconsin; similar but more elongated hills occur in western New York. The longer axis of the hills is parallel to the direction of glacial movement. [H.]

87. An esker in Auburndale, near Boston, Mass.; photographed by J. H. Ropes. Esker is an Irish name applied to ridges of water-worn, roughly stratified, glacial gravel; believed to have been formed in subglacial stream channels during the glacial period. Eskers are probably now forming in the subglacial channels of Malaspina glacier (see 77). [H.]

Other examples of features referable to glacial action are: Fall Creek (63), Ausable chasm (64), Niagara (65 to 68), till plain (7), Cape Cod (11), various lakes (32, 33, 88 to 91).

LAKES.

Nearly all the numerous lakes of the northern part of our country and of northwestern Europe are the result of glacial action; either in the excavation of their basins, or in the obstruction of preglacial valleys by drift. The share of the two processes is difficult to determine. Lakes of other kinds are not here represented.

88. Twin lakes, upper Arkansas valley, Colo. The valley is here obstructed by the terminal moraines of glaciers that formerly descended from the mountains during a colder climatic period. [J. 279.]

89, 90. Placid and Mirror lakes, and Upper Ausable lake, Adirondacks; water bodies lying in basins, presumably in part referable to excavation, in part to obstruction, (see also, 32, 33). [St. 79, 489.]

91.* Otter pond and Kearsarge mountain, N. H. A very suggestive view exhibiting the plateau of New England (part of the Appalachian highland, 34, 54) above which rises the isolated summit of Mt. Kearsarge; beneath which a valley has been eroded, here obstructed by drift and forming Otter pond; glacial boulders lying in the foreground. [H.]

OCEAN AND COASTS.

92. Mid-ocean view; quiet weather; steamer in the distance. [H.]

93, 94. High and low tide in bays near Eastport, Me.; photographed by the author. The rise and fall of the tide in our northeastern bays measures twenty or thirty feet; much greater than is usual on the Atlantic coast. Rapid currents are thus produced in narrow channels, and much inconvenience is caused at landings.

95, 96. Flood and ebb tide at St. Johns harbor, New Brunswick. The narrow, rocky entrance to the harbor has a rushing current, called "the Falls," as the tide flows and ebbs. Vessels usually enter and depart from the harbor near slack water, between flood and ebb tide. [St. 1374, 1375.]

97, 98. Low tide. Mud flats in the Bay of Minas, Nova Scotia (97); broad cobble beach, Bay of Fundy (98). [St. 1398, 1378.]

99.* *Mascaret* of the Seine, at Caudebec, France. As the flood tide enters the narrowing estuary of the Seine, it forms several strong waves, which rush up stream with great speed, causing almost the entire rise of tide in a few minutes. In English estuaries, as in the Severn the rapidly rising tidal wave is called a bore. Tidal action is thus intensified in bays compared to promontories, and is therefore contrasted to wave action. [H.]

100. Waves at Cape Ann, Mass. Waves formed in the open water swing in to the shore and dash against the rocky ledges. Thatcher's island with two lighthouses in the distance. [Soule, Peabody 166.]

101. Surf at Long Branch, N. J. These heavy rollers were produced by a West India hurricane, in September, 1889, which was east of Florida at the time this view was taken. The strong storm waves swing rapidly away from the storm area, and cause a long swell of moderate height in quieter seas; but when the swell runs ashore, it creates a surf, breaking heavily in shallow water. Much sand is thus taken up from the bottom and thrown towards the shore, forming bars or "beaches," as they are called on the Jersey coast. [H.]

102. Islands south of Mt. Desert, Me. The irregular coast of Maine results from a moderate depression of a rugged land, whose valleys are now occupied by arms of the sea (compare Nos. 93, 94), whose ridges stand out in promontories, and whose isolated hills appear as islands. In marked contrast to this, the simple shore line of Texas has been formed by the elevation of the smooth sea bottom, on whose plane surface the sea rests in an even line. [St. 1245.]

103. Nara fiord, Norway. When a deep valley, enclosed by steep mountain walls, is partly submerged, the sea enters it in a narrow

arm, called a fiord. A small delta is built out into the fiord in the foreground from an unseen valley on the left. The fiords of Maine are not so deep or so strongly enclosed as those of Norway. The bays of Nos. 93 and 94 are drowned valleys; the Hudson in the highlands (54, 55) is a shallow fiord. [H.]

104. Sea cliffs, Grand Manan, N. B. The waves beat against the land and cut it away, expending their greater force on projecting headlands which are thus cut back into bold cliffs. The rocks here are old lavas, exhibiting a columnar structure (compare 42). A light house stands on the headland. [Soule, Peabody, 14.]

105. Sea cliff, Dover, England. High cliffs cut in the chalk of southern England. [Soule, England, 3905.]

106.* Sea cliffs, Grand Manan, N. B. A more general view than No. 104, showing cliffs in the middle distance, and a lagoon or enclosed bay in the foreground, shut in by a curving beach or bar. [Soule, Peabody, 4.]

107. Beach near Gloucester, Mass. The rock fragments gathered from the headlands and the sands swept in from the bottom are here thrown up in a curving beach or bar at the head of a bay or cove. The greater height of the beach than of the ground behind it is shown by the houses. The smooth outline of the beach is well fitted to receive the beat of the surf, which breaks evenly upon it. [H.]

108. Wall beach, Scituate, Mass. A long beach of cobble stones, gathered by the waves from the bottom and from the shore cliffs, which are here cut in drumlins. The cobbles are thrown up in a wall-like rampart, enclosing a quiet bay where a tidal marsh (12) is encroaching on the waters. A shore line is progressively simplified by cutting back its headlands and throwing bars across its bays or beaches. [H.]

109.* The "back" of Cape Cod, Mass. The outer or eastern side of the sandy arm of Cape Cod has been cut back by the waves into a long, even, cliffed shore; and the sands thus gathered have been swept into great bars or spits, north (Provincetown) and south (Monomoy). There is consequently no good harborage on the "back" of the Cape. This view includes a stretch of the straight beach. A three-masted schooner has been driven ashore, and a life saving party are rescuing the crew. [H.]

110. Monomoy, Mass.; the low sandy spit or bar built chiefly of sands brought from the Cape to the north and from the shoals off shore; a barren strip of sands, occupied by a few fishing houses, a lighthouse and a life saving station. [St. 1206.]

111. Dunes at Ipswich, Mass. The sand gathered from the beach by on-shore winds is heaped in irregular hills or dunes (see 116, 123). [H.]

112. Jupiter inlet, Florida. When a long sand bar is built parallel to the shore by the waves, a lagoon is frequently enclosed behind it, as is so commonly the case along our Atlantic coast. The tidal currents, running in and out, often maintain an open passage or "inlet" through the bar. [J. 3667.]

113. Surf bathing, Atlantic city, N. J. [McA. 590.]

114. Lighthouse, York, Me. [Soule, Peabody, 121.]

115. Cliff and bar, Lake Michigan. The shore features of large lakes are much like those of the ocean, except in the effects of tides, which are wanting. This view shows strong cliffs in the middle distance, and a bar enclosing a bay in the foreground. [H.]

116. Sand dunes. South Manitou island, Mich. [H.]

MISCELLANEOUS.

117.* New York city. Broadway; one of the great streets of the world. [J. 4037.]

118. New York city, Brooklyn bridge, East river; shipping at the wharves. [McA. 12b.]

119. Chicago, Ill. Stockyards. [McA. 12236.]

120. Ems, on the river Lahn, Germany. A city built in a narrow valley; compare with Queretaro, a city built on an open plain (4). [McA. 13118]

121. Lowell, Mass. Cotton mills driven by water power from the falls of the Merrimac (compare 63). [H.]

122. Cliff house, Mummy cave, Canyon del Muerte, Ariz. These abandoned citadels are found in the desert canyons of Arizona. [Soule, 1890 Sup. 877.]

123. Bedouins and dunes, Sahara desert. The barrenness of this great desert is not due to any inherent lack of fertility in the soil, but simply to the prevailing dryness of the region. The wind blows the sand into hills or dunes, sometimes several hundred feet high. [Th. Egypt, 9705]

124. Camel train in the Sahara desert. [Black, 32.]

125. Suez canal; several good views of this great water way from the Mediterranean through the desert to the Red sea. [Black, 1112; Soule, 6152; Th. Egypt, 9887.]

126. Vineyard, El Cajon, Cal. [H.]

Many examples of the relations of human interests to geographical conditions are given in the views already described; for example, harvesting wheat, (2); picking cotton, (8*b*); crop of sugar cane(8*a*); cattle grazing, (3, 18); flock of sheep, (17); river boats, (55, 60); lighthouses, (104, 114); railroad bridges, (65).

Arrangements have been made with Mr. E. E. Howell, 612 17th street, N. W., Washington, D. C., to supply schools with any or all of the slides named in the list at the uniform price of fifty cents each; this being the usual price charged by dealers. Special prices may be arranged for large orders. In case any teachers prefer to buy slides direct of the makers, the addresses of the various photographers whose collections have supplied examples in the list are given below. The slides may be ordered of Mr. Howell by the current numbers preceding the name of the subject. Otherwise they should be ordered by the number in brackets from the dealer whose name (abbreviated) is given after the description of the slides. Where only the current number is given, the slide can be had only of Mr. Howell. In all cases the name of the slide should be given in ordering as well as its number, so as to lessen chances of error. While desiring to afford every opportunity for the purchase of slides, the author cannot take any responsibility with regard to purchases by teachers from any dealers here named.

Addresses of photographers, referred to above in brackets:

H. E. H. Howell, 612 17th street, N. W., Washington, D. C.

J. W. H. Jackson, Photograph Co., Denver, Col.

McA. T. H. McAllister, 49 Nassau street, New York, N. Y.

St. S. R. Stoddard, Glens Falls, N. Y.

Th. J. H. Thurston, 50 Bromfield street, Boston, Mass.

Soule. Soule Photograph Co., 338 Washington street, Boston, Mass.

Black. J. W. Black, 333 Washington street, Boston, Mass.

Haynes. F. J. Haynes, 392 Jackson street, St. Paul, Minn.

RULES OF THE BOARD OF SCHOOL COMMITTEE.

CHAPTER I.

Organization.

SECTION 1. The Mayor of the city, as Chairman *ex officio* of the Board of School Committee, shall call a meeting of the Board during the first week of each municipal year. First meeting. § 4, 73.

All committees shall be nominated by the Chairman, or in his absence by the Presiding Officer, unless otherwise ordered by the Board. Appointment of Committees. § 12.

SECT. 2. The organization shall be as follows: — Organization.

At the first meeting of the year, a Presiding Officer shall be chosen by ballot for the year ensuing. Presiding Officer. § 4, 12.

A Secretary and a Page shall be elected by ballot and their salaries fixed for the year ensuing. Secretary and Page. § 13.

SECT. 3. The following Standing Committees shall be appointed: — Standing Committees.

A Committee of seven, one from each ward and two at large, on Examination of Teachers. Committee of seven.

Committees of five, one from each ward: — Committees of five.

On High Schools; Evening Schools; Training School; Kindergartens; Text-books and Courses of Study; Truant Officers; Schoolhouses.

Committees of three members each: — Committees of three.

On Rules and Regulations; Accounts and Estimates; Salaries; Supplies; Drawing; Music; Sewing.

CHAPTER II.

Rules Governing Meetings.

SECTION 4. Regular meetings of the Board shall be held monthly at such times as shall be determined by vote. Regular meetings.

Special meetings of the Board may be called by the Special meetings.

§ 1, 2. Mayor, or, in his absence from the city, by the Presiding Officer, and shall be called by the Secretary upon the written request of three or more members of the Board. A notice, stating the object of such meeting, shall be sent to each member at least forty-eight hours previous to the meeting.

Order of business.

SECT. 5. The order of business shall be as follows : —

1. Reading the records of the last meeting.
2. Communications from His Honor the Mayor, the City Council, or other city officers.
3. Approval of bills.
4. Nomination, resignation, and transfer of teachers.
5. Reports of Committees.
6. Unfinished business of previous meetings.
7. Orders, resolutions, petitions, etc.

Quorum.

SECT. 6. Eight members of the Board shall constitute a quorum for the transaction of business.

Suspension of rules.

SECT. 7. The consent of three-fourths of the members present at any meeting shall be requisite for the suspension of any of these Rules.

Amendments. § 23.

SECT. 8. Any amendment of these Rules or Regulations must be proposed in writing and referred to the Committee on Rules and Regulations, who shall report thereon in writing at the next regular meeting, when the report and the proposed amendment shall be in order for consideration and action ; and a vote in favor of the proposed amendment of two-thirds of the members present shall be necessary for its adoption.

Yea and nay vote to be taken on certain orders.

SECT. 9. On all orders authorizing the expenditure of money, the approval of the monthly bills and confirmation of teachers excepted, and on all orders increasing salaries, a yea and nay vote shall be taken.

Nominations. § 14, 21, 38–41, 46–48, 54, 56, 103, 113, 131.

SECT. 10. No nomination shall be acted upon before the next regular meeting succeeding that at which it is made, excepting the nominations of principals of the Evening Schools which may be acted upon at once.

Proprieties in debate.

SECT. 11. Every member, when about to speak, shall rise and respectfully address the Chair, shall confine himself to the question under debate and avoid personalities.

CHAPTER III.

Duties of Officers and Committees.

Duties of Presiding Officer. § 2.

SECTION 12. In the absence of the Mayor, the Presiding Officer shall preside at the meetings of the Board.

Duties of Secretary. § 2.

SECT. 13. It shall be the duty of the Secretary to notify the members of the Board by mail of all meetings; to call special meetings of the Board when requested to do so by the Mayor, by the Presiding Officer, or by three or more members of the Board; to attend all meetings of the Board, record all its votes, orders, and proceedings in a permanent record-book, report an abstract of the same in some paper printed in Cambridge, and send a copy of this abstract to each member of the Board and to the Principal of each school; to notify each member of every committee of his appointment, stating the names of the other members of the committee; to preserve files of communications and documents belonging to the Board; to furnish all teachers appointed or confirmed by the Board with certificates of their qualifications; to prepare the school returns required by law; and to perform such other duties as properly belong to the office.

Committee on Examination of Teachers. § 10, 42, 43, 70.

SECT. 14. The Committee on Examination of Teachers shall inquire and report as to the qualifications of all persons nominated to be teachers in the Grammar and Primary Schools and Kindergartens, below the grade of Master, before final action on such nominations is taken by the Board. This committee shall also inquire and report to the Board in executive session, as to the success of any teacher in the employment of the city, when so requested by any member of the Board or by the Superintendent.

Committee on High Schools. § 19, 46, 51, 103, 105, 107.

SECT. 15. The Committee on High Schools shall have general supervision of the Latin School and the English High School, and shall hold regular meetings, at which the Secretary of the Board shall serve as secretary if it is so desired.

Committee on Evening Schools. § 54, 55, 116.

SECT. 16. The Committee on Evening Schools shall have general supervision of the Evening Grammar Schools and the Evening High School. This committee shall make a written report of the work of the year to the Board at the meeting in December.

Committee on Training School.

SECT. 17. The Committee on Training School shall have supervision of the school, and shall have charge of the

§ 56, 125, 126, 129, 130.

substitute teachers employed by the city. This Committee shall make a written report to the Board at the meeting in December.

Committee on Kindergartens. § 41, 42, 48, 82–84.

SECT. 18. The Committee on Kindergartens shall have the care and management of all the Kindergartens supported by the city. (See page 29.)

Committee on Text-books and Courses of Study. § 15, 67, 91.

SECT. 19. The Committee on Text-books and Courses of Study shall consider every proposition involving a change in the text-books or in the courses of study prescribed for the Grammar and Primary Schools and Kindergartens. Similar propositions relating to the High Schools shall be considered by the Committee on High Schools. Reports shall be made in writing at the next regular meeting of the Board, and may be amended by a majority vote of the members present; but no change of text-books shall be made, and no text-book shall be adopted, except by a two-thirds vote of the Board.

Changes in Text-books and Courses of Study.

Annually, the Committee on Text-books and Courses of Study and the Committee on High Schools shall examine the courses of study pursued in the schools under their charge, and shall recommend to the Board, at the meeting in April, such changes in text-books and instruction as they may deem expedient.

Text-books for examination.

Whenever the Committee on Text-books and Courses of Study or the Committee on High Schools recommend the introduction of a text-book, they shall request the author or publisher of such book to furnish each member of the Board with a copy thereof for examination; and, on request of the publisher, these copies shall be returned after the question of the adoption of the book has been decided.

Charge of teachers' meetings. § 67, 139.

SECT. 20. The Committee on Text-books and Courses of Study shall have general charge of the teachers' meetings and courses of instruction in methods of teaching, and shall determine the time and place for these meetings.

Committee on Truant Officers. § 10, 148, 149, 151, 153, 155.

SECT. 21. The Committee on Truant Officers shall have general supervision and control of the truant officers. They shall make such regulations for the government of the officers in the discharge of their duties as may be necessary, and assign them to the several school districts as they may deem expedient. Annually, at the regular meeting in June, and when vacancies occur, this committee shall nominate suitable persons for election by the Board as truant officers This committee shall hold regular meetings and shall make

a written report to the Board at the meeting in December.

Committee on School-houses. § 69, 141.

SECT. 22. The Committee on School-houses shall consider every matter relating to the erection or alteration of a school-house that shall be referred to them by the Board, and shall report in writing such recommendations in each case as they may deem expedient. They shall have general supervision and control of the janitors, and shall from time to time examine all the schools and school-houses in the city, and annually, in the month of December, and at such other times as they may see fit, shall report upon the sanitary condition thereof.

Committee on Rules and Regulations. § 8.

SECT. 23. The Committee on Rules and Regulations shall consider every proposition to repeal or amend any rule or regulation whenever the same shall be referred to them, and shall report in writing, at the next regular meeting of the Board, stating the reasons for or against the proposed change.

Committee on Accounts and Estimates. § 27, 30, 51, 52.

SECT. 24. The Committee on Accounts and Estimates shall carefully examine and audit all accounts before they are submitted to the Board. They shall submit each month a statement showing the appropriations, expenditures, and balances unexpended. Annually, in the month of December, this committee shall submit in print to the Board an estimate of the amount of money required for the support of the public schools during the current financial year, and this estimate shall be considered by the Board at its first meeting in January.

Committee on Salaries. § 45-50.

SECT. 25. The Committee on Salaries shall consider all propositions for changes in the salaries of teachers referred to them, and shall report in writing at the next regular meeting, such recommendations concerning the same as they may deem expedient. No change shall be made in the salary of any teacher until the report of the committee thereon shall have been received. Annually, in the month of May, this committee shall consider the salaries of all teachers and officers, and shall report at the meeting in May such changes as they may recommend.

Committee on Supplies. § 27-31, 68, ...

SECT. 26. The Committee on Supplies shall have exclusive authority to provide all text-books and supplies used in the public schools, and by the Board and its officers. This committee shall have exclusive power to make such expenditures, except for salaries, as may be required in

teaching the branches of study approved by the Board; but they shall not exceed any of the amounts specified in the estimates, unless so authorized by the Board.

Contracts.

SECT. 27. They may, if they deem it expedient, advertise for proposals, and contract with responsible parties to provide any or all text-books and supplies; they shall also have the custody and management of all such property procured for the schools.

Employment and duties of Agent. § 29, 74.

SECT. 28. They shall employ an agent to take charge of all text-books and supplies purchased by them, and to attend to the distribution, care, and protection of the same, under their supervision; and annually they shall fix his salary subject to the approval of the Board. He shall hold office at the pleasure of this committee, shall attend their meetings, record their transactions, and perform such other duties as may be required.

Annual report.

SECT. 29. Annually, in the month of November, he shall submit to this committee, in detail, an account of all the articles purchased and distributed to the several schools during the preceding school year, as well as of the stock on hand; and annually, in the month of December, this committee shall submit a similar report to the Board.

Approval of bills. § 24.

SECT. 30. All bills for expenditures by this committee shall be approved by at least two members thereof, and submitted monthly to the Committee on Accounts and Estimates.

Additional regulations.

SECT. 31. This committee may make such other regulations from time to time as may be necessary for or advantageous to the conduct of their business, and shall submit the same to the Board, at the next regular meeting, for approval.

Committee on Drawing. § 38, 67, 123.

SECT. 32. The Committee on Drawing shall exercise a general supervision over this department in all the day and evening schools and the Director of Drawing shall perform his duties under their direction. This committee shall make a written report to the Board at the meeting in December.

Committee on Music. § 30, 67.

SECT. 33. The Committee on Music shall exercise a general supervision over this department in all the schools and the Director of Music shall perform his duties under their direction. This committee shall make a written report to the Board at the meeting in December.

Committee on Sewing. § 40, 134.

SECT. 34. The Committee on Sewing shall have general supervision of the instruction in sewing, and shall examine the pupils in this branch. This committee shall make a written report to the Board at the meeting in December.

Ward committees. § 36, 47, 51, 81.

SECT. 35. The members of the Board from each ward shall constitute the Ward Committee, and the schools in the ward not under the direction of a standing committee shall be under their charge. They may assign the schools under their charge as they may see fit to sub-committees.

Sub-committees.

Duties of sub-committees.

SECT. 36. It shall be the duty of sub-committees having charge of schools to give advice to the teachers in any emergency; and, on complaint duly made, to take cognizance of any difficulty that may have occurred between the teachers and the parents or guardians of the pupils, subject to an appeal to the Board. When the place of teacher in any school shall become vacant, the Sub-Committee of the school in which the vacancy occurs shall fill the vacancy after consultation with the Superintendent and the Ward Committee, and report his action to the Board for approval.

Temporary arrangements.

SECT. 37. It shall be the duty of sub-committees to make such temporary arrangements as they may find necessary either in relation to their schools, or for the convenience of the teachers in cases not provided for in the regulations.

CHAPTER IV.

Election and Salaries of Teachers.

Director of Drawing. § 10, 132.

Assistants in Evening Drawing School. § 32.

SECTION 38. The Committee on Drawing shall nominate a Director of Drawing for election by the Board. The Committee on Drawing shall appoint as many assistants for the Evening Drawing School as may be thought necessary before the beginning of the term. This number may be increased or diminished during the term as the needs of the school may require, but shall not exceed one assistant for every twenty pupils in mechanical drawing, nor one for every fifteen pupils in freehand drawing.

Director of Music. § 10, 33, 133.

SECT. 39. The Committee on Music shall nominate a Director of Music for election by the Board.

Teachers of Sewing. § 10, 34, 134.

SECT. 40. The Committee on Sewing shall nominate teachers of sewing for election by the Board.

Teachers of Kindergartens. § 10, 18.

SECT. 41. The Committee on Kindergartens shall nominate teachers for the Kindergartens for election by the Board

Candidates eligible for Kindergartens. § 14

SECT. 42. No teacher shall receive an appointment in a Kindergarten who has not taken a course of study for at least one year at some Kindergarten Normal School approved by the Committee on Kindergartens and the Superintendent of Schools.

Candidates eligible for Grammar and Primary Schools. § 14, 125.

SECT. 43. No person shall be eligible to the position of teacher in the Grammar or Primary Schools who is not equally qualified with teachers who have completed the required term of service in the Cambridge Training School.

Term of office.

SECT. 44. Directors and teachers shall hold office at the pleasure of the Board until the end of the school-year.

Election.

SECT. 45. The teachers shall be chosen annually, and their salaries voted, at the regular meeting in June. Those teachers will be considered candidates for reëlection who do not signify a desire to the contrary.

Nominations at a salary other than the minimum. § 10.

SECT. 46. All nominations for the Latin School and the English High School at a salary other than the minimum shall be made only upon the recommendation of a majority of the Committee on High Schools.

§ 10, 35.

SECT. 47. All nominations for the Grammar and Primary Schools at a salary other than the minimum shall be made only upon the recommendation of the three members of the Ward Committee, or of two members and the Superintendent.

§ 10.

SECT. 48. All nominations for the Kindergartens at a salary other than the minimum shall be made only upon the recommendation of a majority of the Committee on Kindergartens.

Experience considered.

SECT. 49. Experience in teaching, whether in or out of the city, may be considered in fixing the salaries of teachers.

Payment of salaries.

SECT. 50. Directors and teachers, except those in the Evening Schools, shall be paid one-tenth of their annual salaries at the beginning of each month except the months of August and September. The pay of regular teachers who are in school only a part of a month shall be as many four-hundredths of the annual salary as there are school sessions of service.

Time of increase of salaries.

The date of the regular increase of salaries shall be the first day of September, December, or March, whichever is nearest the time of appointment, not counting July and August.

Payment of substitutes. § 35, 59, 127, 128, 130.

SECT. 51. A substitute employed in the absence of any teacher shall be paid from the salary of that teacher, unless, upon a report of the Committee on Accounts and Estimates, the Board shall otherwise order. The pay of substitutes, when acting as assistants in the Grammar and Primary Schools, shall be one dollar for each school session.* This rate of pay shall continue for the first four weeks of the teacher's absence, after which it may be increased by the Ward Committee. In the High Schools and Kindergartens the pay of substitutes shall be two-thirds of the salary of the regular teacher. After four weeks this may be increased by the respective committees in charge of these schools. Substitutes shall be paid before the fifth of the month following that in which the service was rendered. (Page 29.)

After four weeks of absence. § 59.

SECT. 52. After the first four weeks of absence, the pay of any teacher shall be only so much as shall be required to pay the substitute. A longer continuance of the full salary may be granted, provided the Committee on Accounts and Estimates, on written recommendation of the Committee in charge of the school to which the absentee belongs, shall so recommend to the Board.

Payment for temporary services.

SECT. 53. The names of teachers temporarily employed in any school shall be placed upon the pay-roll and the correctness of their bills certified by the Superintendent.

Principals of Evening Schools. § 10, 16.

SECT. 54. At the meeting of the Board in September, the Committee on Evening Schools shall submit to the Board nominations for principals of the Evening High and the Evening Grammar Schools, who, when elected, shall hold office at the pleasure of the Board during the term.

Assistants in Evening Schools. § 16.

SECT. 55. As many assistants as may be thought necessary shall be appointed for each school by the Committee on Evening Schools before the beginning of the term. The number may be increased or diminished by said Committee at any time during the term, but shall not exceed one assistant for every eight pupils.

Teachers in Training School. § 10, 17, 125.

SECT. 56. In the Training School, the Master and the assistants shall be nominated by the Committee on Training School for election by the Board. The teachers constituting the Training Class shall be chosen by the Committee on Training School.

*Sessions omitted by direction of the Superintendent on account of storms or for teachers' meetings are considered school sessions in determining the amount to be paid to substitutes.—*Order of School Committee, Apr.* 21, 1877.

REGULATIONS FOR THE PUBLIC SCHOOLS.

CHAPTER V.

Regulations Relating to the Instructors.

Teachers to observe Regulations.

SECTION 57. All teachers in the public schools are required to make themselves familiar with the provisions of these regulations, especially with that portion of them relating to their school duties. They are also required to observe and carry into effect all the regulations of the Board in relation to the instruction and discipline of their respective schools. No teacher shall be excused from the observance of any regulation except by a vote of the Board.

Before school hours.

SECT. 58. All teachers are required to be at their respective school-rooms at least fifteen minutes before the time specified for beginning school; and all pupils when in or about their respective school-houses shall be subject to the rules of order for school-hours.

Absences of teachers to be reported. § 35, 51, 52, 58, 60-62.

SECT. 59. When any teacher is absent from school he or she shall give notice immediately of such absence, and the reason therefor, to the Committee in charge of the school, and to the Superintendent. At the end of each month each teacher shall send to the Superintendent a report of the number of school sessions from which he or she has been absent from school during that month, the reason for such absence, the names of the substitutes, and the number of school sessions each substitute was employed; and also the number of times he or she has failed to be present at school fifteen minutes before the opening of each session.

Record of absences.

SECT. 60. The Superintendent shall keep a record of these absences, which shall at all times be open to the inspection of the Committee.

Absence of more than four weeks.

SECT. 61. When a teacher has been absent from school more than four weeks, the Master or Principal of the school to which the teacher belongs shall report the fact immediately to the Secretary of the Board, and shall also report at once the date of the teacher's return.

Absence without permission.

SECT. 62. The absence of any teacher from school during any session required by these regulations, without permission from the Committee in charge or the Superintendent, shall be considered sufficient cause for removal.

SECT. 63. It is enjoined on the teachers to exercise vigilant, prudent, and firm discipline, and to govern by persuasion and gentle measures as far as possible. No pupil shall be kept after the morning session more than fifteen minutes, or after the afternoon session more than half an hour. No pupil entering school shall be subject to corporal punishment in any form. But, if a pupil prove to be disorderly or refractory, such pupil shall be liable to corporal punishment during the remainder of the term, the written consent of the Committee in charge of the school having been first obtained, and due notice to the parent or guardian having been given by the Principal.

Discipline. Detention after school. Corporal punishment.

SECT. 64. Any teacher may suspend a pupil from school for violation of the school regulations or the rules of the school, or for any other sufficient cause; but he shall immediately report the case to the parent or guardian of such pupil, and to the Committee in charge of the school or to the Superintendent, with a written statement of the cause of such suspension. Whenever the Superintendent is notified of the suspension of a pupil he shall investigate the case; and if in his judgment the case requires it, he shall report to the Committee in charge of the school. Except in aggravated cases, suspension shall take effect only at the end of a school session; and no pupil shall be sent from the school-building during school hours by reason of misconduct or failure in lessons, without the knowledge of the Principal, who shall make a record of each case and send notice thereof at once by the truant officer to the parent or guardian. A pupil under censure in one school shall not be admitted to any other.

Suspension of pupils. Report thereof. § 153. Pupils under censure.

SECT. 65. Every pupil not present in the school-room at the time appointed for opening the session of the schools shall be recorded as absent unless he is present during some part of that session, in which case he shall be recorded as tardy. Any pupil not having a satisfactory excuse for either absence or tardiness may be required to bring from the Committee in charge of the school or the Superintendent a written permit to return to school. It shall be the duty of each teacher to ascertain the cause of frequent or prolonged absence of any pupil of his school; and to use his influence to prevent its repetition.

Absence and tardiness of pupils. § 75, 114, 118

SECT. 66. Teachers shall report the names and resi- Truants.

§ 153. dences of habitual truants and the names of their parents or guardians to the truant officer of the district.

Visiting schools. SECT. 67. The teachers may, under the direction of the Superintendent, visit other schools to observe the discipline and instruction. They may be required to attend

Teachers' meetings. § 20. teachers' meetings or courses of instruction in methods of teaching for one hour a week, unless excused by the Superintendent. Such meetings may be held on Saturday morning during term-time, or at such other time, not in school-hours, as the Committee on Text-books and Courses of

§ 32, 33, 139. Study may direct. Meetings held by the Superintendent, and meetings called by him, by request of the Director of Drawing or the Director of Music under the authority of the Standing Committees having supervision of the instruction in these subjects, shall be in addition to the above requirements.

Care of school supplies. § 26. SECT. 68. The principals of the several schools shall be responsible for all books, apparatus, and materials supplied to their schools, and annually, at the end of the spring term, shall make a return of the same to the Committee on Supplies.

Care of school-houses. § 141. SECT. 69. The principals shall exercise proper supervision of the school-houses and the appurtenances thereto, and report such repairs as may be required to the Superintendent of Public Buildings or to the Superintendent of Schools.

Dissatisfaction with a teacher. § 14. SECT. 70. Any member of the Board who is dissatisfied with a teacher shall give notice of such dissatisfaction to the Board; and all further action in relation to such teacher shall be under its direction.

CHAPTER VI.

Regulations Common to all the Public Schools.

Classification of schools. SECTION 71. The public schools of Cambridge shall be classified as follows: — Kindergartens, and Primary, Grammar, and High Schools.

School terms. SECT. 72. The school-year shall be divided into three terms, — the autumn, the winter, and the spring term. The autumn term shall end December twenty-third with the morning session. The winter term shall begin January second (or on the day after that celebrated as New Year's Day) and shall

end on the Wednesday before the first Thursday in April. The spring term shall begin on the second Monday after the first Thursday in April. The time for the closing of the spring term and for the beginning of the autumn term shall be fixed annually at the regular meeting of the Board in April.

Holidays. SECT. 73. In addition to the vacations provided in the preceding section, the schools shall have no session on Saturday. Thanksgiving Day with the day preceding and the day following, the Twenty-second of February, Memorial Day, the Seventeenth of June, and also for the High Schools, Commencement day at Harvard College, shall be holidays. The Chairman of the Board is authorized to suspend the schools on such public occasions as he may think proper, not exceeding three days in any one municipal year; and each Sub-Committee may suspend the schools under his immediate charge on such other occasions as he may think proper, not exceeding three days in a year. § 1.

Contagious diseases. § 154. SECT. 74. No pupil shall be admitted to any school without a certificate of vaccination from a physician. No teacher or pupil shall attend school while any member of the household to which such teacher or pupil belongs is sick with small-pox, varioloid, diphtheria, or scarlet-fever, or during the period of two weeks after the death, recovery, or removal of such sick person, such length of time being certified in writing to the teacher by the attending physician or board of health. All text-books belonging to the city, which are in such homes, shall be destroyed by direction of the agent of the Committee on Supplies. No teacher or pupil shall be allowed to attend school who is affected with measles or whooping-cough. Teachers shall have authority to exclude temporarily from school any pupil who may be affected with other diseases or eruptions of doubtful character; but all such cases shall be reported at once to the Committee in charge of the school. § 28.

Absence for instruction elsewhere. § 65. SECT. 75. No pupil belonging to a public school shall be absent from school, or be excused from any school exercise, in order to receive regular instruction elsewhere, without the consent of the Committee in charge of the school. The absence or tardiness of any pupil so excused shall not be considered in making up the statistics of attendance.

Devotional exercises.

SECT. 76. The morning exercises in all the schools shall begin with reading from the Scriptures and the repetition or reading of the Lord's Prayer.

Non-resident pupils.

SECT. 77. Non-resident pupils and those residing in Cambridge for the sole purpose of attending school, shall neither be admitted to nor retained in any school without a permit from the Superintendent. The Superintendent is authorized to give permits to those applicants only who shall have paid in advance to the City Treasurer the tuition fee fixed by the Board.

Pupils to a teacher.

SECT. 78. In the Primary Schools there shall be, as nearly as possible, one teacher for every fifty pupils, and in the Grammar Schools one assistant teacher for every fifty pupils, in conformity with chapter 44, section 14, of the Public Statutes. In any Grammar School having more than ten rooms, an additional assistant teacher may be appointed who shall work in the various grades as directed by the Master and the Superintendent.

Collections of money.

SECT. 79. No subscription or collection of money for any purpose whatever shall be allowed in any of the schools, or from any of the pupils, unless by written permission of the Committee in charge of the school.

Advertisements. Agents.

SECT. 80. No person shall read any advertisement to the pupils in any school; and no agent or other person shall enter any school for the purpose of exhibiting, either to teachers or pupils, any book or article of apparatus, unless by the written permission of the Committee in charge of the school.

School districts.

SECT. 81. Each ward may be divided by the Ward Committee into districts; and no pupil shall be admitted to or retained in any school, except that for the district in which he resides, without the written consent of the Committee of the school to which such pupil belongs, and of that where he seeks to be admitted or retained. No pupil who has been attending any public school shall be received into another school of the same grade unless he presents a certificate from his last teacher that he has been regularly dismissed. The certificate shall also state the grade to which the pupil belonged.

Certificates of discharge. § 35, 36.

CHAPTER VII.

Regulations for the Kindergartens.

Admission to Kindergartens § 18, 74.

SECTION 82. Children between three and a half and five years of age may be admitted to the Kindergarten nearest their homes by applying during the month of April or September. They may remain one year, or for a longer time if less than five years of age.

Number of pupils. § 51.

SECT. 83. Each Kindergarten shall contain not less than twenty-five nor more than fifty pupils. For thirty or more pupils there shall be a Principal and an Assistant. An attendant, if thought necessary by the Committee on Kindergartens, may be appointed in any Kindergarten, who may be paid at a rate not exceeding twenty-five cents a day.

§ 18.

Sessions. § 73, 146. Afternoon service.

SECT. 84. The sessions of the Kindergartens shall be from 9 A. M. to 12 M. Teachers shall employ their afternoons, except when the time is needed for preparation for their work, in visiting the homes of their pupils with a view of maintaining friendly relations with the parents, and also of securing regularity of attendance.

CHAPTER VIII.

Regulations for the Primary and Grammar Schools.

Classification of pupils in Primary Schools.

SECTION 85. Pupils in the Primary Schools shall be classified, according to their qualifications, in three grades, to be known as the first, second, and third.

Admission to Primary Schools. § 74, 92.

SECT. 86. Pupils shall be admitted regularly to the Primary Schools on the first school day of March and September only; but pupils in all respects qualified to join existing classes may be admitted at any time on application to the Principal of the school to which they respectively belong. No child under the age of five years shall be received into any Primary School.

Principals of Primary Schools. § 61, 63, 64, 68, 69.

SECT. 87. There shall be in each Primary School a Principal, who shall be nominated by the Sub-Committee having charge of the school, subject to confirmation by the Board, whose duties shall be as follows: she shall make all necessary regulations for the management of the pupils when not assembled in their respective rooms; she shall receive

all applications for admission to the school, assign each pupil to his proper class, and, after the annual promotion of classes, shall have charge of re-organizing the school; and no pupil shall be changed from one class to another without her consent, or the consent of the Superintendent of Schools; she shall keep the statistics of the school, and such other records as from time to time may be required by the Committee or the Superintendent; she shall see that there is uniformity among the teachers in the interpretation of these regulations and of the doings of the Board as published by the Secretary.

Special teacher in Primary Schools.

SECT. 88. There shall be one special teacher of Primary Schools who, under the direction of the Superintendent, shall have general supervision of such schools throughout the city.

Promotions in Primary Schools and from Primary to Grammar Schools.

SECT. 89. Promotions from grade to grade in the Primary Schools and from the Primary to the Grammar Schools shall be made according to the judgment of the primary teachers, under the direction of the special teacher of Primary Schools and the Superintendent.

Promotion by Classes.

SECT. 90. Promotions by classes from the Primary to the Grammar Schools shall be made annually at the beginning of the autumn term; but individual pupils may be promoted at other times, if it is deemed expedient by the Sub-Committee or the Superintendent.

Arrangement of Work of Grammar Schools. § 19.

SECT. 91. The work of the Grammar Schools shall be arranged in two courses, one to be accomplished in six years and the other in four years. The pupils pursuing the six years' course shall be classified in six grades, to be known as the fourth, fifth, sixth, seventh, eighth, and ninth grades; and those pursuing the four years' course shall be classified in four grades, to be known as grades A, B, C, and D. Pupils may be transferred from one of these courses to the other at the end of any school year, or, if the master sees special reason, at any time during the school year. An ungraded class may also be formed when in the opinion of the Sub-Committee having charge of the school and the Superintendent such a class would be for the interest of the school.

Classification of Pupils in Grammar Schools.

Ungraded classes.

Promotions n Grammar Schools and from Grammar to High Schools.

SECT. 92. Promotions from grade to grade in the Grammar Schools and from the Grammar to the High Schools shall be made by the teachers under the direction of the Grammar School Masters and the Superintendent. Pupils

in all respects qualified to join existing classes may be admitted at any time on application to the Principal of the school to which they respectively belong.

Admission to Grammar Schools. § 74, 86.

SECT. 93. No regular pre-announced examinations shall be held in the Primary or Grammar Schools; but the results of such written exercises and written reviews as the teachers and masters may hold from time to time without previous announcement may be recorded and used as a part of the basis of promotion. In the lowest grades of the Grammar and High Schools, records shall be kept of the work of pupils promoted without examination.

No pre-announced examinations.

SECT. 94. The Master's Assistant in each Grammar School shall keep the general records of the school, shall collect such statistical information in regard to the school as the Committee or the Superintendent may require, shall have charge of the Master's room during his absence, and shall teach such subjects as he may require. There shall be but one master's assistant in each Grammar School.

Duties of Masters' Assistants.

SECT. 95. The Sub-Masters in the Grammar Schools shall assist in the care and distribution of supplies and in the maintenance of order, as they may be directed from time to time by the Masters. In the temporary absence of the Master, the Sub-Master shall have charge of the pupils while in the halls and basements and in the vicinity of the school building, and may exercise authority in any of the several rooms when requested by the teacher in charge of the room. In the absence of the Master for a specified time, the Sub-Master shall assume such part of the Master's duties as may be agreed upon by the Sub-Committee in charge of the school and the Superintendent.

Duties of Sub-Masters.

SECT 96. Diplomas of graduation, signed by the Chairman of the Board, the Sub-Committee, and the Master of the school, shall be awarded to those pupils of the graduating class of each Grammar School who, in the opinion of the Master and the Superintendent, have honorably completed the prescribed course of study and whose deportment during the last year has been generally satisfactory. Each Master of a Grammar School one week before the close of the spring term, shall send to the Head-Master of the Latin School, and of the English High School, and to the Superintendent of the Manual Training School respectively a list of the names of the pupils in his school who are candidates for

Diplomas. § 106, 116, 123.

Names of candidates to be sent. § 105.

admission to these schools; he shall send a copy of these lists to the Superintendent of Schools.

Sessions. § 73, 146.

SECT. 97. The sessions shall be from 9 A. M. to 11.45 A. M., and from 2 P. M. to 4 P. M., for the entire school year; except that during the months of November, December, and January the afternoon session shall be from 1.30 to 3.30 o'clock. These hours for opening and closing shall be punctually observed by the teachers.

Physical exercises.

SECT. 98. Midway in each school session five minutes shall be devoted to physical exercises; these shall occur at the same time throughout the building and meanwhile the school-rooms shall be thoroughly ventilated.

Supervision by principals.

SECT. 99. To secure uniformity and efficiency in their management, the schools are committed to the charge of the principals, who, under the direction of the sub-committees, shall hold the assistant teachers responsible for the faithful execution of their plans and wishes.

CHAPTER IX.

Regulations for the Latin School and the English High School.

Classification of pupils.

SECTION 100. The pupils of the Latin School shall be classified in five grades.

SECT. 101. The pupils of the English High School shall be classified in four grades.

Teachers. § 46, 51.

SECT. 102. The teachers in each school shall be a Head-Master, a Master, and as many assistants as may be needed.

Secretary and Librarian. § 10.

SECT. 103. The Committee on High Schools may appoint a Secretary and Librarian for each of the schools, subject to confirmation by the Board.

Qualifications for admission.

SECT. 104. The qualifications for admission to either school shall be ability to read, write, spell, and define well; a good knowledge of English Grammar; a general knowledge of the History of the United States; a thorough acquaintance with Geography and Arithmetic, and, in general, with all the studies required in the lower schools.

Admission on diploma. § 92, 96.

SECT. 105. Pupils who have received the diploma of their respective Grammar Schools, certifying that they have satisfactorily completed the prescribed course of study, may be admitted to either school without an exami-

nation. For other persons who desire admission, an examination shall be held at the beginning of the autumn term under the direction of the Committee on High Schools, but pupils may be admitted to advanced standing at any time. No pupil from any class in a Grammar School shall be examined who does not present a satisfactory certificate that he has pursued his studies during the summer vacation. Examination of other applicants. § 74, 86.

SECT. 106. Pupils who have completed the prescribed course of study in either school and have sustained a good character shall be entitled to diplomas. Diplomas.

SECT. 107. The sessions shall begin at 8.30 A. M. and shall end at 1.30 P. M.; but the sessions for pupils who take the manual training course shall begin and end at such time as may be agreed upon by the Committee on High Schools and the Trustees of the Manual Training School. Sessions. § 73.

CHAPTER X.

Regulations for the Evening Schools.

SECTION 108. The Evening Schools shall comprise Elementary and Grammar, High, and Drawing Schools. Classification. § 16, 32.

SECT. 109. The term of the Evening Schools shall begin on the second Wednesday of October, and continue every Monday, Wednesday, and Friday evening for fifty evenings. Vacations and holidays shall be the same as in the day schools. Terms and holidays. § 72, 73.

SECT. 110. The sessions of these schools shall begin at half-past seven o'clock and continue until half-past nine o'clock. Sessions.

SECT. 111. Teachers shall be present and the schoolroom open at least fifteen minutes before the beginning of each session. Before school hours.

SECT. 112. Registration for the Evening Schools, except for the Elementary Department, shall cease on the first day of November. No pupil shall be admitted to any class after that date, except by special permission of the Committee in charge or of the Superintendent. Registration.

SECT. 113. The Principal of each of the Evening Schools shall be responsible for the general management of his school. He shall be in attendance, with two assistants if necessary, the two evenings preceding that on Duties of Principal. § 10, 54, 55.

§ 155. which the term begins, and shall examine applicants and assign them their places. He shall keep a record of the attendance of each pupil; and he shall report the attendance at each session weekly to the Superintendent.

Admission of pupils. § 65. SECT. 114. Adults and children who are unable to attend the day schools may attend the Evening Schools. Any pupil absent three successive sessions shall be discharged, unless his excuse is satisfactory to the Sub-Committee or the Superintendent.

Number of pupils for a class. SECT. 115. Except in the Elementary Department, no study shall be taken up until at least ten pupils have expressed an intention to take the course and continue it until the end of the term. Any study may be discontinued by the Sub-Committee when the average attendance on that course for two successive weeks falls below ten.

Diplomas. § 16. SECT. 116. Pupils of the Evening High School who have completed satisfactorily the prescribed course may receive diplomas by vote of the Committee on Evening Schools.

Evening Drawing School. § 32, 38. SECT. 117. The Principal of the Evening Drawing School shall be present, with two assistants if necessary, the two evenings immediately preceding that on which the term begins, to receive, examine, and classify applicants for admission.

Admission of pupils. § 65. SECT. 118. All persons over fifteen years of age, who express their intention of attending the entire term, may be admitted. Any pupil absent three successive sessions without a reasonable excuse shall forfeit his right to a seat.

Subjects taught. SECT. 119. Freehand drawing, mechanical drawing, and modelling shall be taught in the Evening Drawing School;

Three years' course. and there shall be a three years' course in each of these departments.

Promotions. SECT. 120. Each pupil shall take the prescribed course and pass the required examinations in order to be promoted.

SECT. 121. Pupils who have satisfactorily completed a year's work and passed the required examinations shall receive a written certificate of promotion from the Principal.

SECT. 122. No pupil shall be admitted to advanced standing without such certificate, except by passing the required examinations.

Diplomas. § 32. SECT. 123. Pupils who have satisfactorily completed the course may receive diplomas by vote of the Committee on Drawing.

CHAPTER XI.

Regulations for the Training School.

Teachers. § 56.

SECTION 124. The teachers of this school shall consist of a Master, three assistants, and as many teachers as the number of pupils shall require; but the cost of instruction per pupil shall not exceed the average cost of pupils in the other Grammar and Primary Schools of the city.

Cost of instruction.

Candidates. § 17, 43, 56.

SECT. 125. Graduates of the High Schools, who have also graduated from one of the State Normal Schools or from the Boston Normal School, and other persons of equal attainments may be appointed teachers in this school by the Committee on Training School; and such teachers shall constitute a Training Class.

Training Class.

Term of service.

SECT. 126. The term of service in the training class shall be one year; but any teacher in this class may be excused or dismissed at any time by the Committee on Training School.

Compensation. § 51.

SECT. 127. The money compensation to the members of the training class for their services shall be two hundred dollars each for the year. Any money received by them as substitutes shall be used in the payment of their salaries.

Second year.

SECT. 128. When the interest of the school requires it teachers may be retained for a longer term than one year. The money received by these teachers when acting as substitutes shall be divided among them equally.

Supervision.

SECT. 129. The Master and assistants shall be responsible for the instruction and management of this school under the direction of the Committee on Training School.

Substitute teachers.

SECT. 130. The Committee on Training School may employ four teachers, at a salary not exceeding four hundred dollars per annum, to act as substitutes in the Grammar or Primary Schools, when needed; and when their services are not so required, they shall teach in the schools to which they may be assigned by the Superintendent. The amount received by each of these teachers when acting as a substitute shall be deducted from her salary.

CHAPTER XII.

Special Instruction.

Special instruction. § 10.

SECT. 131. Special instruction shall be given in Drawing, Music, and Sewing by instructors employed for that purpose or under their direction.

Instruction in Drawing. § 32, 38, 67.

SECT. 132. Instruction in drawing shall be given in all the schools; in the High Schools by the Director of Drawing, and in the Grammar and Primary Schools by the regular teachers under the direction and supervision of the Director of Drawing.

Instruction in music. § 33, 39, 67.

SECT. 133. Instruction in music shall be given in all the schools; and every pupil who is capable of learning to sing shall be required to give attention to this subject. During the exercise in singing, the teacher of the school shall be present and govern the pupils. Instruction in music shall be given in the Primary Schools and in the lower half of the Grammar Schools by the regular teachers under the supervision of the Director of Music.

Instruction in sewing. § 34, 40.

SECT. 134. Instruction in sewing shall be given in the lower half of the Grammar Schools under the direction of the Committee on Sewing.

CHAPTER XIII.

Duties of the Superintendent.

Election.

SECT. 135. The Superintendent of the Public Schools shall be elected annually, at a meeting of the Board in June, and shall enter upon his duties upon the first day of September following.

Care of Schools.

SECT. 136. He shall have the care and supervision of the schools under the direction and control of the Board, shall see that its regulations are carried into effect, and shall perform such other duties as the Board from time to time may direct.

Progress of education.

SECT. 137. He shall acquaint himself with whatever concerns the interest and progress of popular education, in order that all the children in this city may secure the best education practicable.

SECT. 138. He shall devote the principal part of school

hours to visiting the schools for the purpose of obtaining a personal knowledge of their condition, and shall keep regular office hours other than school hours at such place as may be provided. Visiting schools.

SECT. 139. He shall advise the teachers as to the best methods of instruction and management, and for this purpose he may hold meetings of the Grammar, and of the Primary teachers, and may dismiss their respective schools at such times as he may deem advisable, not exceeding one day in each term. Teachers meetings § 20, 67.

SECT. 140. He shall render such aid and communicate such information to the Board and the various committees as they may require.

SECT. 141. He shall inspect the grounds, buildings, furniture, and apparatus belonging to the schools, and report any deficiency in them; and, in general, he shall report anything that is unfavorable to the health and physical development of the pupils. Inspect school buildings. § 22, 69.

SECT. 142. He shall make a report to the Board annually, giving an account of the schools, and making such suggestions as he may deem advisable; and this report may be adopted by the Board as its annual report required by statute. Annual report of Superintendent and Board.

SECT. 143. All reports and communications to the Board shall be made in writing, unless otherwise ordered.

SECT. 144. He shall keep for the inspection of the Board a record of the name, age, and residence of each person applying for the situation of teacher, with such remarks and suggestions as he may deem proper. Applications of teachers.

SECT. 145. He shall be present at all meetings of the Board, except while the election of Superintendent is under consideration. Attend meetings of the Board.

SECT. 146. He shall have authority to notify the teachers on stormy days to dispense with either session of the Grammar and Primary Schools and Kindergartens. The signal is five strokes of the fire-alarm repeated once. When given at 8.05 A. M. the morning session of the Grammar and Primary Schools and Kindergartens will be omitted. When given at 12.45 P. M., or at 1.15 P. M., the afternoon session of the Grammar and Primary Schools will be omitted. Close schools on stormy days. Signal.

CHAPTER XIV.

Truant Officers.

Truant Officers. § 21.

SECTION 147. Truant Officers shall be chosen annually at the regular meeting of the Board in June, and shall enter upon their duties on the first day of September following.

Shall enforce the statutes.

SECT. 148. They shall enforce, under the direction and control of the Committee on Truant Officers, all statutes of the Commonwealth in relation to truant children, absentees from school, and such children as persistently violate the reasonable rules and regulations of the common schools; shall report to parents all cases of suspension from school; shall conform strictly to these regulations; and shall perform such other duties as the Committee on Truant Officers may direct.

Shall devote all their time.

SECT. 149. They shall devote all their time to the duties of their office, and shall diligently inquire into every case of truancy, juvenile vagrancy, or unlawful detention from school, whether discovered by themselves or reported to them. They shall prosecute in the name of the city, when so directed by the Committee on Truant Officers, every person having under his control a child between the ages of eight and fourteen years, who neglects or refuses to cause such child to attend some day school at least thirty weeks in each year, excepting only for reasons mentioned in chapter 47, section 1, of the Public Statutes; and, also, all habitual truants, and children between seven and fifteen years of age who may be found wandering about in the streets or public places of this city, having no lawful occupation or business, not attending school, and growing up in ignorance, and such children as persistently violate the reasonable rules and regulations of the common schools.

hall prosecute.

Shall visit and inspect factories.

SECT. 150. They shall visit and inspect once each month while the public schools are in session all factories, workshops, and mercantile establishments in their respective districts, and ascertain if there is any violation of the public statutes relating to the employment of children therein.

Shall keep records.

SECT. 151. They shall keep a faithful record of all cases, showing the name, age, and residence of the offender, and the nature of the offence, and make a monthly report in writing of their doings to the Committee on Truant Officers.

SECT. 152. They shall prevent children from loitering about the school premises to the annoyance and disturbance of the neighborhood. Shall prevent loitering.

SECT. 153. They shall visit each school at least once a day, unless otherwise directed by the Committee on Truant Officers, to receive information in relation to cases described in these regulations. Shall visit schools. § 64, 66.

SECT. 154. They shall assist the teachers in enforcing the regulations of this Board concerning contagious and infectious diseases among the school children. Contagious diseases. § 74.

SECT. 155. Truant Officers may be detailed by the Committee on Truant Officers to attend the Evening Schools to assist in the preservation of order. Evening schools.

SECT. 156. They shall annually, in the month of May, ascertain the names and ages of all persons between the ages of five and fifteen years, belonging in Cambridge on the first day of May, and make a record thereof in a book provided for this purpose. Census returns.

AMENDMENTS.

SECT. 18. * * * This committee shall make a written report to the Board at the December meeting. Added to Sec. 18. Amended Dec. 21, 1893.

SECT. 51. * * * When a teacher is absent from school without the permission or approval of the Committee in charge or the Superintendent, and no substitute is provided, the sum which would be paid to a substitute shall be deducted from the next payment to the absent teacher. The Principal of each school shall notify the Secretary whenever a teacher is absent without a substitute. The teacher known as a special teacher shall not be considered a substitute. Added to Sec. 51. Amended March 15, 1894.

PROVISIONS OF THE PUBLIC STATUTES.

[These extracts are not complete, but contain important information.]

POWERS OF THE SCHOOL COMMITTEE.

The school committee of a town are to determine what is a "sufficient number" of schools for a town to maintain. Chief Justice Shaw uses the following language: —

"There being no specific direction how schools shall be organized; how many schools shall be kept; what shall be the qualifications for admission to the schools; the age at which children may enter; the age to which they may continue; — these must all be regulated by the committee, under their power of general superintendence."

HIGH SCHOOLS.

Every town may, and every town containing five hundred families shall, maintain a high school. Such high school shall be kept for the benefit of all the inhabitants of the town, ten months at least, exclusive of vacations, in each year. — *Pub. Stat.*, *Chap.* 44, *Sect.* 2.

EVENING HIGH SCHOOLS.

Every city of fifty thousand or more inhabitants shall establish and thereafter annually maintain an evening high school in which shall be taught such branches of learning as the school committee thereof may deem expedient whenever fifty or more residents, fourteen years of age or over, who desire and, in the opinion of the school committee, are competent to pursue high school studies, shall petition in writing for an evening high school, and certify that they desire to attend such school. — *Chap.* 236, *Acts of* 1886.

EVENING SCHOOLS.

Every town and city having ten thousand or more inhabitants shall establish and maintain evening schools for the instruction of persons over twelve years of age. — *Chap.* 174, *Acts of* 1883.

INDUSTRIAL AND MECHANICAL DRAWING.

Any town may, and every city and town having more than ten thou-

sand inhabitants shall, annually make provision for giving free instruction in industrial or mechanical drawing to persons over fifteen years of age, in either day or evening schools, under the direction of the school committee. — *Pub. Stat. Chap.* 44, *Sect.* 7.

INDUSTRIAL SCHOOLS.

A town may establish and maintain one or more industrial schools, which shall be under the superintendence of the school committee, who shall employ the teachers, prescribe the arts, trades, and occupations to be taught therein, and have the general control and management thereof; but they shall not expend for any such school an amonnt exceeding the appropriation specifically made therefor, and shall not compel any scholar to study any trade, art or occupation without the consent of his parents or guardian ; and attendance upon such school shall not take the place of the attendance upon public schools required by law. — *Pub. Stat. Chap.* 44, *Sect.* 8.

APPOINTMENTS OF TEACHERS.

The school committee shall select and contract with the teachers of the public schools ; shall require full and satisfactory evidence of the good moral character of all teachers who may be employed ; and shall ascertain, by personal examination, their qualifications for teaching, and their capacity for the government of schools — *Pub. Stat.*, *Chap.* 44, *Sect.* 28.

DISMISSAL OF TEACHERS.

The school committee may, when they think proper, dismiss any teacher from employment, and such teacher shall receive no compensation for services rendered after such dismissal. — *Pub. Stat.*, *Chap.* 44, *Sect.* 30.

PROVISIONS OF CHAPTER 348, ACTS OF 1888,

As Amended by Acts of 1889 *and* 1890.

NO CHILD UNDER THIRTEEN TO BE EMPLOYED.

No child under thirteen years of age shall be employed at any time in any factory, workshop, or mercantile establishment.

WHEN CHILDREN UNDER FOURTEEN MAY BE EMPLOYED.

No child under fourteen years of age shall be employed in any factory, workshop, or mercantile establishment, except during the vacation of the public schools in the city or town where he resides, unless the person or corporation employing him procures and keeps on file a certificate and employment ticket for such child.

No child who has been continuously a resident of a city or town since reaching the age of thirteen years, shall be entitled to receive a certificate that he has reached the age of fourteen, unless or until he has

attended school according to law in such city or town for at least thirty weeks since reaching the age of thirteen, unless such child can read at sight and write legibly simple sentences in the English language, or is exempted by law from such attendance.

No child under sixteen can be employed without a certificate of age.

WHO SHALL SIGN CERTIFICATES.

In cities and towns having a superintendent of schools, said certificate shall be signed only by such superintendent, or by some person authorized by him in writing. [The Secretary of the School Committee has been duly authorized by the Superintendent.]

WHO MAY SIGN CERTIFICATES OF AGE.

The certificate as to the birthplace and age of a child shall be signed by his father, if living and a resident of the same city or town; if not, by his mother; or, if his mother is not living, or if living is not a resident of the same city or town, by his guardian; if a child has no father, mother, or guardian living in the same city or town, his own signature to the certificate may be accepted by the person authorized to approve the same.

INSPECTION OF FACTORIES AND WORKSHOPS.

The truant officers may, when so authorized by vote of the School Committee, visit the factories, workshops, mercantile establishments, and other places where children are employed and ascertain whether any children under sixteen years of age are employed contrary to the provisions of the statutes; and they may demand the names of all such children and may require that the certificates and lists of children provided for by statute shall be produced for their inspection. They shall report any cases of illegal employment to the School Committee and to the chief of the district police or the inspector of factories for the district.

TRUANTS AND DISOBEDIENT PUPILS.

Each town shall make all needful provisions and arrangements concerning habitual truants and children between seven and fifteen years of age who may be found wandering about in the streets or public places therein, having no lawful occupation or business, not attending school, and growing up in ignorance, *and such children as persistently violate the reasonable rules and regulations of the common schools*, and shall make such by-laws as shall be most conducive to the welfare of such children, and to the good order of such town; and shall provide suitable places for the confinement, discipline, and instruction of such children.

Any minor convicted under a by-law made under section ten of being an habitual truant, or of wandering about in the streets and public places of a city or town, having no lawful employment or business, not attending school, and growing up in ignorance, *or of persistently vio-*

lating the rules and regulations of the common schools, shall be committed to any institution of instruction, or suitable situation provided for the purpose, under the authority of said section or by-law, for a term not exceeding two years. — *Chap.* 249, *Acts of* 1889.

PENALTY FOR DISTURBING SCHOOLS.

Whoever wilfully interrupts or disturbs a school or other assembly of people met for a lawful purpose shall be punished by imprisonment in the jail not exceeding thirty days, or by fine not exceeding fifty dollars. — *Pub. Stat.*, *Chap.* 207, *Sect.* 23.

MALICIOUS INJURY TO BUILDINGS.

Whoever wilfully and maliciously or wantonly and without cause, destroys, defaces, mars, or injures a school-house, church, or other building erected or used for purposes of education or religious instruction, or for the general diffusion of knowledge, or an outbuilding, fence, well, or appurtenance of such school-house, church, or other building, or furniture, apparatus, or other property belonging to or connected with such school-house, church, or other building, shall be punished by fine not exceeding five hundred dollars, or by imprisonment in the jail not exceeding one year. — *Pub. Stat.*, *Chap.* 203, *Sec.* 78.

INJURY TO LIBRARIES.

Whoever wilfully and maliciously or wantonly and without cause writes upon, injures, defaces, tears, or destroys a book, plate, picture, engraving, or statue, belonging to a law, town, city, or other public library, shall be punished by fine of not less than five, nor more than fifty dollars, or by imprisonment in the jail not exceeding six months. — *Pub. Stat.*, *Chap.* 203, *Sec.* 79.

NO LIQUOR TO BE SOLD WITHIN FOUR HUNDRED FEET OF A SCHOOL BUILDING.

No license of the first, second, or third class, under the provisions of chapter one hundred of the Public Statutes, shall be granted for the sale of intoxicating liquors in any building or place on the same street within four hundred feet of any building occupied in whole or in part by a public school. — *Chap.* 220, *Acts of* 1882.

PATRIOTIC EXERCISES.

An act of the Legislature approved March 21, 1890, provides as follows: —

SECTION 1. In all the Public Schools of the Commonwealth the last regular session prior to Memorial Day, or a portion thereof, shall be devoted to exercises of a patriotic nature.

SECT. 2. This act shall take effect upon its passage.

BOUNDARIES OF THE SCHOOL DISTRICTS.

Allston School..

Beginning at Columbia street, including the south side of Market street, to and including both sides of Broadway to West Boston bridge; thence along the river to and including the north side of Massachusetts avenue, to and including the east side of Columbia street to Market street.

Corlett School.

Beginning at the railroad near Fresh Pond, along but not including Fresh Pond lane, to and including Mt. Auburn and Belmont streets, to and along Belmont line, to but not including Concord avenue, to and along the railroad to Fresh Pond lane.

Harvard School.

Beginning at Kirkland street, the Somerville line across and including Elm street, to and including the south side of Market street, to and including the west side of Columbia street, to and including the north side of Massachusetts avenue, to and including the east side of Trowbridge street, to and including the east side of Kirkland street to the Somerville line.

Morse Grammar School.

Beginning at the corner of Pearl and Auburn streets, south of but not including Auburn street to the river; along the river to and including the east side of Pleasant street, to and including the south side of Fairmont street, to and including the east side of Magazine street, to and including the south side of Erie street, to and including the east side of Pearl street to Auburn street.

Primary School. Beginning at the corner of Magazine and Erie streets, including the south side of Erie street to the river;

along the river to and including the east side of Magazine street to Erie street.

Peabody School.

Beginning at the corner of Massachusetts and Lambert avenues, including the west side of Massachusetts avenue, to and including Chauncy street, across and including Concord avenue, to and including Craigie and Brattle streets, across and including Appleton street, to and including Saville street, across and including Walden street to Garden street (including all of Concord avenue); thence east of but not including Walden street, to and including Raymond street to Lambert avenue; thence east of but not including Lambert avenue to Massachusetts avenue.

Putnam School.

All that part of Ward Three east of and including all of Fourth street and a line of continuance of Fourth street parallel with Third street to the canal.

Shepard School.

Beginning at the line of Arlington, the Somerville line across and including White street, to and including Massachusetts avenue, across and including Lambert avenue, to but not including Raymond street, to and including Walden street to Garden street; thence across but not including Walden street, to but not including Concord avenue, to and along the Belmont and Arlington lines to the line of Somerville.

Thorndike School.

All that part of Ward Three west of but not including Fourth street and a line of continuance of Fourth street parallel with Third street to the canal, and that part of Ward Two east of the railroad.

Washington School.

Beginning at the railroad near Fresh Pond, south of but not including Concord avenue, to but not including Walden street to but not including Saville street, to but not including Apple

ton street, across and not including Brattle and Craigie streets, to but not including Concord avenue, to but not including Chauncy street, to and including the west side of Massachusetts avenue, to the south side of but not including Cambridge street, to and including the west side of Trowbridge street, to and including the west side of Putnam avenue, to but not including Western avenue, to and along the river to and including Coolidge avenue and Mt. Auburn street, to and including Fresh Pond lane, to and along the railroad to Concord avenue.

Webster School.

Beginning at Putnam avenue, including the south side of Massachusetts avenue to Harvard Bridge; thence along the river across and including Auburn street, to and including the west side of Pearl street, to and including the north side of Erie street, to and including the west side of Magazine street, to and including the north side of Fairmont street, to and including the west side of Pleasant street to the river; thence along the river to and including Western avenue, to and including the east side of Putnam avenue to Massachusetts avenue.

Wellington Grammar School.

Beginning at Elm street, the Somerville line to and along the railroad, to but not including Broadway, to and including the north side of Market street, to but not including Elm street to the Somerville line.

Primary School. Beginning at Elm street, the Somerville line to but not including Willow street, to but not including Cambridge street, to and along the railroad, to but not including Broadway, Hampshire or Plymouth streets, to and including Elm street to the Somerville line.

Agassiz School.

Beginning at the corner of Massachusetts and Lambert avenues, along but not including White street, to and along the Somerville line, to and including the west side of Kirkland street, to and including the west side of Trowbridge street, across and

including Cambridge street, to and including the east side of Massachusetts avenue to Lambert avenue.

Primary School. Beginning at Davenport street, the Somerville line to the west line of Ward Two, which is a line of continuance of Dana street; along this line, across and including Cambridge street, to and including Kirkland street, to and including the east side of Massachusetts avenue, to and including Shepard street, to but not including Garden street, across and including Linnæan street, to and including Raymond street, to but not including Walden street, across and including Mt. Pleasant street, to and including Lambert avenue, to and including Massachusetts avenue, to a line of continuance of Davenport street to Somerville line (not including Davenport street).

Boardman School.

Beginning at the corner of Columbia and Harvard streets, the south side of but not including Harvard street, to but not including Brewery street, across Main street, across and including Albany street, to and including the north side of Massachusetts avenue, to and including the east side of Columbia street to Harvard street.

Cushing School.

Beginning at the railroad near Fresh Pond, including Fresh Pond lane, to and including Mt. Auburn and Belmont streets to and along the Belmont line, across and including Concord avenue, to and along the railroad to Fresh Pond lane.

Dana School.

Beginning on Line street at the line of Ward Two which is a line of continuance of Dana street, the Somerville line to and including the south side of Cambridge street, to and including the west side of Fayette street, to and including the south side of Broadway, to but not including Inman street, across Massachusetts avenue, to and including the west side of Pleasant street, across and including Green street, across and including Putnam avenue, to and including Trowbridge street, to but not including Cambridge street to Dana street, and on a line of continuance of Dana street to the Somerville line.

Dunster School.

Beginning at the Arlington line, along the Fitchburg railroad to Dublin street; thence south of and not including Bolton street, thence including the south side of Dublin street, to and including the east side of Walden street, to but not including Raymond street, to but not including Linnæan street, to and including Garden street, to and including the west side of Bond street, to but not including Parker street, across but not including Buckingham street south of Parker street, to but not including Craigie street, to but not including Brattle street, to but not including Appleton street, to and including Vassal lane, to and along the railroad across and not including Concord avenue, to and along the Belmont line.

Felton School.

Beginning on Line street opposite Maple avenue, the Somerville line to but not including Elm street, to and including the north side of Hampshire street, across and not including Prospect street, to but not including Broadway to Inman street, thence including the north side of Broadway, to and including the east side of Fayette street, to and including the north side of Cambridge and Line streets to the Somerville line.

Gannett School.

Beginning at Willow street, the Somerville line to the railroad, across and including Cambridge street, to and including Willow street to the Somerville line.

Gore School.

All that part of Ward Three east of and including Fourth street, to and including Spring street to the river.

Holmes School.

Beginning at Ash street, including the south side of Brattle street, to and including Boylston street, south of but not including Winthrop street, across and including Holyoke street, to and

including Mill street, to and including De Wolf street, to and including the south side of Mt. Auburn street to Putnam avenue; thence including the west side of Banks street, across and including Grant street, to and including De Wolf street, across Dyke street to the river; thence along the river to but not including Ash street or Ash street place to Brattle street.

Lassell School.

Beginning at the railroad, the middle of and including the south side of Vine street, to and including Fourth street, to but not including Spring street, to and along the river, to and along the canal to the railroad.

Lowell School.

Beginning at the railroad, the south side of but not including Vassal lane, across and including Appleton street, to and including Brattle street, to and including Willard street, to and along the river, to and including Coolidge avenue, to and including Mt. Auburn street, to but not including Fresh Pond lane, to and along the railroad to Vassal lane.

Otis School.

Beginning at the railroad, the Somerville line to but not including Bridge street, to but not including Fourth street, to and including north side of Vine street, to and along the railroad to the Somerville line.

Parker School.

The district south of the canal and east of and including Brewery street.

Quincy School.

Beginning at Bond street, including Garden street, across and not including Shepard street, to and including the west side of Massachusetts avenue, across but not including Cambridge street, to but not including Trowbridge street, to and including the north side of Mt. Auburn street beyond and not including De Wolf street, to but not including Mill street, to but not includ-

ing Holyoke street, to and including Winthrop street, to but not including Boylston street, to and including the north side of Brattle street, to and including Ash street and Ash street place to the river; thence along the river to but not including Willard street (but including Willard place), across and not including Brattle street, across and including Craigie street, to and including Buckingham street, to and including Parker street, to and including the east side of Bond street to Garden street.

Reed School.

Beginning at the Arlington line, the south side of the Middlesex Central railroad across and including Reed street, to and including Sargent street, across and including Railroad street, to and including Dublin street, to and including all of Bolton street, thence a line west along the Fitchburg railroad to and along the Belmont and Arlington lines to the Middlesex Central railroad.

Riverside School.

Beginning at the corner of De Wolf and Grant streets, south of but not including Grant street, to and including the east side of Banks street, to but not including Mt Auburn street, to but not including Putnam avenue to Green street, thence across and including Putnam avenue, to but not including Western avenue to the river; thence along the river to Dyke and De Wolf streets to Grant street.

Sargent School.

Beginning at Elm street, including Hampshire street to and including Plymouth street, and thence including Hampshire street to the junction of Hampshire, Broadway and Brewery streets; thence west of and not including Brewery street, across and including Harvard street, to and including the east side of Columbia street, to and including the north side of Broadway, to and including the east side of Elm street to Hampshire street.

Stearns School.

Beginning at Prospect street, including the south side of Hampshire street, to and including the west side of Elm street,

to and including the south side of Broadway, to and including the west side of Columbia street, to and including the north side of Massachusetts avenue, across and including Inman street, across and including Broadway, to and including Prospect street to Hampshire street.

Tarbell School.

Beginning at Putnam avenue, the south side of but not including Green street, to but not including Pleasant street, across and including Western avenue to the river, along but not including Putnam avenue to Green street.

Willard School.

Beginning at Pleasant street, including the south side of Massachusetts avenue to Harvard bridge ; thence along the river to and including the north side of Erie street, to and including the west side of Magazine street, to and along the river, to but not including Western avenue, to and including Pleasant street to Green street, thence including only the east side of Pleasant street to Massachusetts avenue.

Wyman School.

Beginning at the Arlington line, the line of Somerville to and including Davenport street and a line of its continuance, across but not including Massachusetts avenue, to but not including Lambert avenue, to but not including Mt. Pleasant street, to and including Walden street to Raymond street ; thence including the west side of Walden street, to and including the north side of Dublin street to Bolton street, thence not including Bolton or Dublin streets, to but not including Railroad street, to but not including Sargent street, to but not including Reed street, to and along the Middlesex Central railroad, to and along the Arlington line to the line of Somerville.